

Radio  
**AMATEUR**  
Call Book Magazine

**\$2<sup>25</sup>**  
*Foreign*  
**\$2<sup>50</sup>**

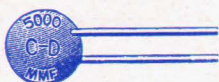


**SPRING 1951**



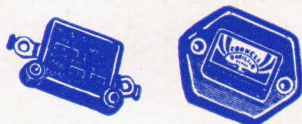
# "You Can't Go Wrong"

## ON CAPACITORS



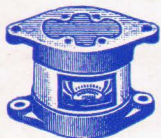
### NEW! C-D "TINY MIKE"\*

Miniature Ceramic Disc Capacitors.



### C-D MOULDED MICA TRANSMITTER

Capacitor Type 4 and 9— they've never been matched for dependability and accuracy.



### C-D TYPE 50 SERIES TRANSMITTER CAPACITORS

Featuring exclusive series stack construction, the standard of quality among broadcasters for over 50 years.



also *Faradon*,  
PAPER, MICA and  
ELECTROLYTIC

Capacitors for every application.  
Send for new catalog 200B.

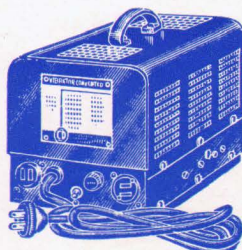
## ON VIBRATORS and CONVERTERS



**C-D**

### NEW "QUIETONE" VIBRATORS

They're quieter, longer lasting, more efficient. Write for Catalog



### "POWERCON"\* CONVERTERS

For DC to AC; AC to DC and DC to DC conversion. More dependable, more efficient. Catalog on request.

## ON ROTATORS and ANTENNAS

### NOW!

The rugged, foolproof rotator you've been waiting for:

**C-D  
SKYHAWK  
TELE-ROTOR**



### C-D SKYHAWK ANTENNAS

For brilliant reception on Amateur, TV, FM, Auto Radios.

Cornell-Dubilier Electric Corporation,  
Dept. JH11, South Plainfield, New Jersey.  
Other plants in New Bedford,  
Worcester, and Brookline, Mass.;  
Providence, R. I.; Indianapolis, Ind.,  
and subsidiary Radiart Corporation  
plants, Cleveland, Ohio.

If you ask for  
**"CORNELL-DUBILIER"**  
*Best by Field Test!*



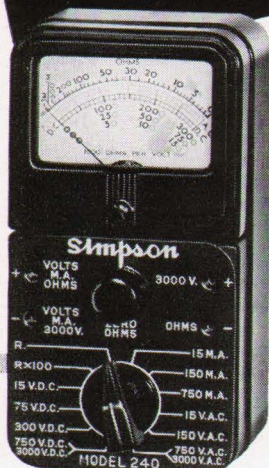
FOR NEAREST AUTHORIZED C-D JOBBER SEE YOUR LOCAL CLASSIFIED TELEPHONE DIRECTORY

1910-1951



*W. Ben Wimberly*  
(W9IXD)

well-known amateur says: "For quick, accurate trouble shooting around my ham shack, the Simpson Model 240 Hammeter is indispensable. I've used Simpson equipment for many years."



#### RANGES: Model 240

**AC VOLTS:** 0-15, 150, 750, 3000  
(1000 ohms per volt)

**DC VOLTS:** 0-15, 75, 300, 750, 3000  
(1000 ohms per volt)

**DC MILLIAMPERES:** 0-15, 150, 750

**OHMS:** 0-3000 (center scale 30)  
0-300,000 (center scale 3000)

**ACCURACY:** DC 3%—AC 5%

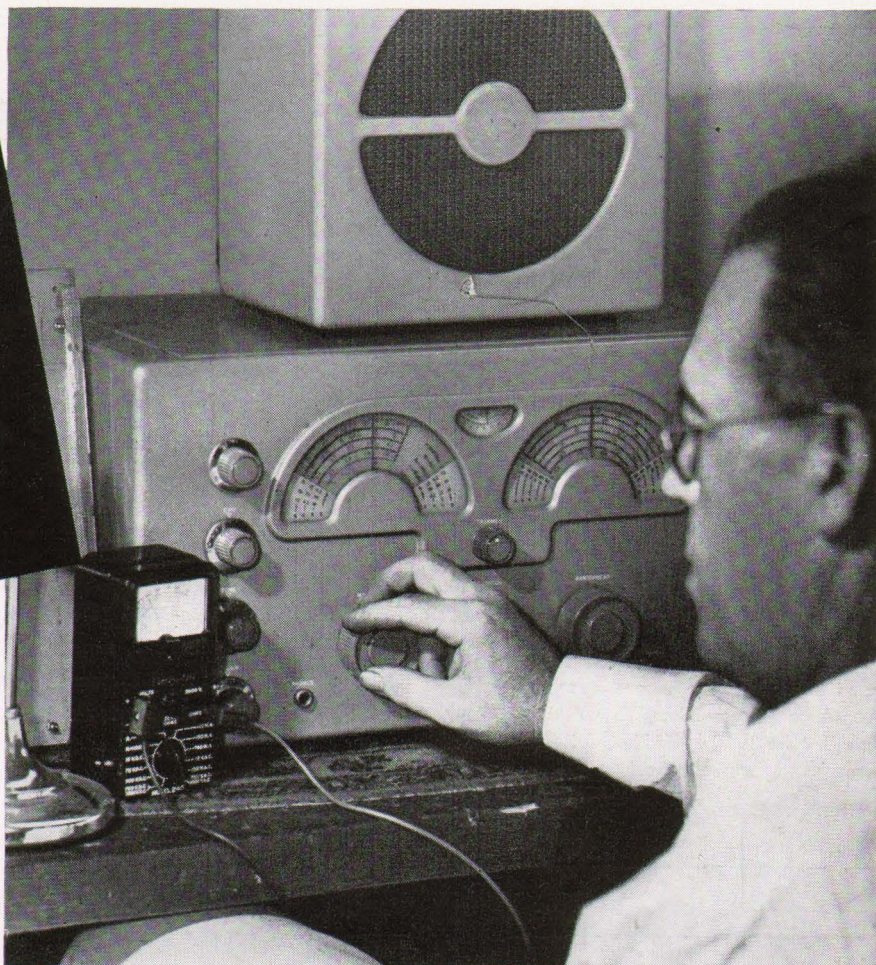
**SIZE:** 3"x5 7/8"x2 1/2".

**WEIGHT:** 1 1/4 lbs.

**SHIPPING WEIGHT:** 2 1/2 lbs.

**AMATEUR'S NET PRICE . . . \$24.60**

Leatherette Case . . . . . 5.00



### WORLD FAMOUS SIMPSON HAMMETER IS FIRST WITH RADIO AMATEURS

The famous 240 Hammeter—named by the radio "ham"—is world renowned for its ruggedness and accuracy. It was designed for the additional voltage and sensitivity required in radio testing.

A favorite with "hams" because of its maximum voltage range of 3000 AC or DC, the 240 was the first self-contained pocket portable built expressly to check high voltage and all component parts of transmitters and receivers.



A worthy companion of the Hammeter is the Model 230 volt-ohm-milliammeter, with a maximum voltage of 1000 AC or DC. Its ranges are adequate for most line voltages, for telephone, teletype, and general purpose testing.

#### RANGES: Model 230

**AC VOLTS:** 0-10, 250, 1000 (400 ohms per volt)

**DC VOLTS:** 0-10, 50, 250, 1000 (1000 ohms per volt)

**DC MILLIAMPERES:** 0-10, 50, 250

**OHMS:** 0-1000, 0-100,000

**ACCURACY:** DC 3%—AC 5%

**SIZE:** 3"x5 7/8"x2 1/2"

**WEIGHT:** 1 1/4 lbs.

**SHIPPING WEIGHT:** 3 lbs.

**AMATEUR'S NET PRICE . . . . . \$23.40**

Leatherette Case . . . . . 5.00

**Simpson**  
INSTRUMENTS THAT STAY ACCURATE

**SIMPSON ELECTRIC COMPANY**

5200-18 WEST KINZIE STREET, CHICAGO 44, ILLINOIS

In Canada: Bach-Simpson Ltd., London, Ontario



# RADIO AMATEUR CALL BOOK

## MAGAZINE

All licensed radio amateurs throughout the world are urged to write to us direct if your QTH is not listed in this issue. We want your call letters, Name and complete mailing address. Please print or use the typewriter to avoid errors. Our information comes from official sources, but you may get your call listed in an earlier issue if you write to us.

All United States radio amateurs who intend to renew their license should do so as soon as possible. We will keep expired calls in the CALLBOOK for a reasonable length of time.

W9TRD.

©

VOLUME 29 NUMBER 1

Copyright 1951 by

### RADIO AMATEUR CALL BOOK (Incorporated)

608 South Dearborn Street  
CHICAGO 5, ILLINOIS, U. S. A.  
PHONE WABASH 2-1903

#### Representatives

CLEVELAND, OHIO  
JAMES C. MUNN  
2253 DELAWARE DRIVE, CLEVELAND 6  
PHONE ERIEVIEW 1-1726

NEW YORK, N. Y.  
HERBERT J. OLSOW  
480 LEXINGTON AVENUE, NEW YORK 17  
PHONE PLAZA 9-7864-5

#### Editor

MRS. CHARLES O. STIMPSON

#### Assistant Editor

MARIE LAURIA

#### Founder and Publisher

CHARLES O. STIMPSON  
W9TRD

RADIO AMATEUR CALL BOOK IS published quarterly. Annual subscription, \$7.00 in the United States and Possessions. Canada and foreign countries, \$8.00. Single copies in U. S. and Possessions \$2.25, elsewhere \$2.50. Entered as second class matter February 9, 1946, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

## CONTENTS

AIR-LINE DISTANCES in Miles Between Cities in the United States .....	4
RADIO AMATEUR PREFIXES, arranged alphabetically by prefix .....	6
RADIO AMATEUR PREFIXES, arranged alphabetically by country .....	8
POSTAL INFORMATION, showing postage rates to foreign countries .....	10
GREAT CIRCLE MAP centered on San Francisco, California .....	12
GREAT CIRCLE MAP centered on the United States .....	14
GREAT CIRCLE BEARING TABLE centered on the United States .....	15
GREAT CIRCLE MAP centered on New York, N. Y. ....	16
GREAT CIRCLE BEARINGS centered on New York, N. Y. ....	17
WORLD MAP showing radio amateur prefixes .....	18
GREAT CIRCLE BEARINGS from the United States to various world wide metropolitan areas .....	20
FIRST CALL AREA .....	21
Includes the States of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.	
SECOND CALL AREA .....	41
Includes the States of New Jersey and New York.	
THIRD CALL AREA .....	77
Includes the States of Delaware, Maryland, Pennsylvania, and the District of Columbia.	
FOURTH CALL AREA .....	97
Includes the States of Alabama, Florida, Georgia, Kentucky, North and South Carolina, Tennessee, Virginia and the territories of Puerto Rico and the Virgin Islands.	
FIFTH CALL AREA .....	120
Includes the States of Arkansas, Louisiana, Mississippi, New Mexico, Oklahoma and Texas.	
SIXTH CALL AREA .....	141
Includes the State of California, the Territory of Hawaii and those Pacific Possessions not assigned to the seventh call area.	
SEVENTH CALL AREA .....	173
Includes the States of Arizona, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming, the territory of Alaska and adjacent islands.	
EIGHTH CALL AREA .....	191
Includes the States of Michigan, Ohio, and West Virginia.	
NINTH CALL AREA .....	210
Includes the States of Illinois, Indiana and Wisconsin.	
TENTH CALL AREA .....	233
Includes the States of Colorado, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota and South Dakota.	
FOREIGN RADIO AMATEUR STATIONS, arranged alphabetically by prefix .....	255
GREAT CIRCLE CHART of the United States .....	391
WORLD TIME CONVERSION TABLE .....	392
STANDARD TIME throughout the world .....	393
INTERNATIONAL Q SIGNALS .....	394
GREAT CIRCLE BEARINGS IN THE UNITED STATES .....	400

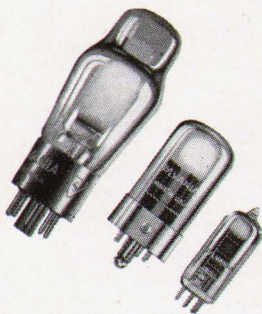


# RECEIVING! SENDING! TESTING!



## ... you'll enjoy highest performance with SYLVANIA tubes and equipment

It's no mere idle boast when we state that Sylvania tubes and equipment show outstanding records in performance and long life. For this company, a pioneer in radio tube production has advanced through engineering and research to recognized leadership in this specialized field. Radio amateurs today, seeking results above the ordinary, are urged to look for the name SYLVANIA on the tubes and equipment they buy.



### RECEIVING TUBES

All Sylvania tubes are produced under the most rigid standards of quality control. Made in types for every need... from tiny subminiatures to the famous Sylvania lock-in types.

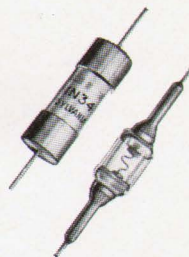
### TRANSMITTING TUBES

More than 20 precision-built transmitting tubes are now included in the Sylvania line. Shown at right are the 5933/807W and 3D24. Short internal leads and excellent shielding sharply reduce parasitic oscillations and give these tubes remarkable stability.



### GERMANIUM DIODES

These long-life, compact, heaterless components are chosen today for hundreds of applications in circuits requiring low power rectification at frequencies up to several hundred megacycles. Convenient pigtail leads eliminate need for mounting hardware.



### MODULATION METER

This Sylvania instrument monitors modulation percentage and speech quality. Compact and economical. Use it to keep your transmission clear and efficient. \$29.50

### POLYMER (Type 221Z)

Here's the ideal multi-purpose meter for AM or FM testing. Tests receivers as well as transmitters. Accurate and dependable. New improved circuit provides excellent stability. \$99.50



### HIGH VOLTAGE PROBES

These fine quality Sylvania DC Probes permit the measuring of high voltages by increasing the DC range of polymeters. Type 223 is 10,000 volt probe (\$9.95). Type 225 extends Polymeter range to 30 KV (\$12.50).



# SYLVANIA ELECTRIC

Sylvania Electric Products Inc.  
Dept. R-4203, Emporium, Pa.

Please send me illustrated literature describing Sylvania's new line of Test Equipment.

Name

Street

City  Zone  State

RADIO TUBES; ELECTRONIC PRODUCTS; TELEVISION PICTURE TUBES; ELECTRONIC TEST EQUIPMENT; TELEVISION SETS; FLUORESCENT TUBES, FIXTURES, SIGN TUBING, WIRING DEVICES; LIGHT BULBS; PHOTOLAMPS



# AIR-LINE DISTANCES IN MILES BETWEEN CITIES IN THE UNITED STATES

	ATLANTA, GA.	BIRMINGHAM, ALA.	BISMARCK, N. D.	BOSTON, MASS.	BUFFALO, N. Y.	CHARLESTON, W. VA.	CHEYENNE, WYO.	CHICAGO, ILL.	CLEVELAND, OHIO	COLUMBIA, S. C.	DALLAS, TEXAS	DENVER, COLORADO	DES MOINES, IOWA	DETROIT, MICH.	EL PASO, TEXAS	HELENA, MONTANA	HOUSTON, TEXAS	INDIANAPOLIS, IND.	JACKSONVILLE, FLA.	KANSAS CITY, MO.	LITTLE ROCK, ARK.	LOS ANGELES, CALIF.	LOUISVILLE, KY.	MIAMI, FLORIDA	MILWAUKEE, WIS.	MINNEAPOLIS, MINN.	NASHVILLE, TENN.	NEW ORLEANS, LA.	NEW YORK, N. Y.	NORFOLK, VA.	PHILADELPHIA, PA.	PHOENIX, ARIZONA	PITTSBURGH, PA.	ST. LOUIS, MO.	SALT LAKE CITY, UTAH	SAN FRANCISCO, CALIF.	SEATTLE, WASHINGTON	WASHINGTON, D. C.	WILMINGTON, N. C.
ATLANTA, GEORGIA		140	1244	937	697	353	1229	587	554	194	721	1212	739	596	1291	1697	701	426	285	676	456	1936	319	604	668	907	214	424	748	505	666	1592	521	467	1583	2139	2182	543	371
BIRMINGHAM, ALA.	140		1174	1052	776	442	1119	578	618	334	581	1095	670	641	1152	1602	567	433	374	579	325	1802	331	665	659	862	182	312	864	638	783	1456	608	400	1466	2013	2082	661	512
BISMARCK, N. D.	1244	1174		1489	1106	1133	440	734	1014	1359	990	531	506	926	1081	534	1211	881	1529	618	943	1267	965	1838	682	384	1030	1297	1396	1430	1367	1095	1127	779	694	1265	1013	1318	1474
BOSTON, MASS.	937	1052	1489		400	622	1735	851	551	791	1551	1769	1159	613	2072	2024	1605	807	1017	1251	1259	2596	826	1255	857	1123	943	1359	188	471	271	2300	483	1038	2099	2699	2493	393	673
BUFFALO, NEW YORK	697	776	1106	400		344	1335	454	173	623	1198	1370	760	216	1692	1640	1286	435	879	861	913	2198	483	1181	458	731	627	1086	292	947	279	1906	178	662	1699	2300	2117	292	598
CHARLESTON, W. VA.	353	442	1133	622	344		1246	400	217	302	935	1256	673	284	1475	1642	984	262	553	701	642	2054	225	870	461	755	322	754	440	311	365	1733	158	465	1616	2205	2132	253	350
CHEYENNE, WYOMING.	1229	1119	440	1735	1335	1246		891	1199	1390	726	96	583	1125	653	521	947	986	1493	560	813	882	1033	1763	878	642	1032	1131	1604	1556	1556	663	1298	795	371	967	973	1477	1540
CHICAGO, ILLINOIS	587	578	734	851	454	400	891		308	652	803	920	309	238	1252	1248	940	165	863	414	552	1745	269	1188	81	355	397	833	713	699	666	1453	410	262	1260	1858	1737	597	745
CLEVELAND, OHIO	554	618	1014	551	173	217	1199	308		518	1025	1227	617	90	1525	1541	1114	263	770	700	740	2049	311	1087	335	630	459	924	405	432	360	1749	115	492	1568	2166	2026	306	541
COLUMBIA, S. C.	194	334	1359	791	623	302	1390	652	518		914	1380	863	585	1484	1837	891	489	256	830	644	2123	395	569	726	998	358	599	605	332	523	1781	448	603	1751	2317	2326	405	178
DALLAS, TEXAS	721	581	990	1551	1198	935	726	803	1025	914		663	632	999	572	1247	225	763	908	451	293	1240	726	1111	857	862	617	443	1374	1196	1299	887	1070	547	999	1483	1681	1185	1091
DENVER, COLORADO	1212	1095	531	1769	1370	1256	96	920	1227	1380	663		610	1156	557	591	879	1000	1467	558	780	831	1038	1726	914	700	1023	1082	1631	1566	1579	586	1320	796	371	949	1021	1494	1537
DES MOINES, IOWA	739	670	506	1159	760	673	583	309	617	863	632	610		546	983	977	821	411	1023	180	478	1438	476	1333	309	235	525	827	1022	983	973	1155	715	273	953	1550	1467	896	993
DETROIT, MICHIGAN	596	641	926	613	216	284	1125	238	90	585	999	1156	546		1479	1455	1105	240	831	645	723	1983	316	1152	252	543	470	939	482	522	443	1690	205	455	1492	2091	1938	396	623
EL PASO, TEXAS	1291	1152	1081	2072	1692	1475	653	1252	1525	1484	572	557	983	1479		1065	676	1264	1473	839	847	701	1254	1643	1279	1157	1169	983	1905	1755	1836	346	1590	1034	689	995	1376	1728	1661
HELENA, MONTANA	1697	1602	534	2024	1640	1642	521	1248	1541	1837	1247	591	977	1455	1065		1467	1382	1973	1023	1315	924	1453	2260	1206	912	1488	1646	1929	1947	1897	907	1652	1236	403	807	450	1842	1969
HOUSTON, TEXAS	701	567	1211	1605	1286	984	947	940	1114	891	225	879	821	1105	676	1467		865	821	644	388	1374	803	968	1005	1056	665	318	1420	1204	1341	1017	1137	679	1200	1645	1891	1220	1066
INDIANAPOLIS, IND.	426	433	881	807	435	262	986	165	263	489	763	1000	411	240	1264	1382	865		699	453	483	1809	107	1024	243	511	251	712	646	573	585	1499	330	231	1356	1949	1872	494	593
JACKSONVILLE, FLA.	285	374	1529	1017	879	553	1493	863	770	256	908	1467	1023	831	1473	1973	821	699		950	690	2147	594	326	942	1191	499	504	838	546	758	1794	703	751	1837	2374	2455	647	346
KANSAS CITY, MISSOURI	676	579	618	1251	861	701	560	414	700	830	451	558	180	645	839	1023	644	453	950		325	1356	480	1241	443	413	473	680	1097	1009	1038	1049	781	238	925	1506	1506	945	981
LITTLE ROCK, ARK.	456	325	943	1259	913	642	813	552	740	644	293	780	478	723	847	1315	388	483	690	325		1480	435	949	618	708	325	355	1081	909	1007	1137	779	291	1148	1688	1785	892	818
LOS ANGELES, CALIF.	1936	1802	1267	2596	2198	2054	882	1745	2049	2123	1240	831	1438	1983	701	924	1374	1809	2147	1356	1480		1829	2339	1744	1524	1780	1673	2451	2355	2394	357	2136	1589	579	347	959	2300	2294
LOUISVILLE, KY.	319	331	965	826	483	225	1033	269	311	395	726	1038	476	316	1254	1453	803	107	594	480	435	1829		919	349	605	154	623	652	529	582	1508	344	242	1402	1986	1943	476	516
MIAMI, FLORIDA	604	665	1838	1255	1111	870	1763	1188	1087	569	1111	1726	1333	1152	1643	2260	968	1024	326	1241	949	2339	919		1267	1511	815	669	1092	797	1019	1982	1010	1061	2089	2594	2734	923	598
MILWAUKEE, WIS.	668	659	682	857	458	461	878	81	335	726	357	914	309	252	1279	1206	1005	243	942	443	618	1744	349	1267		299	478	910	733	749	694	1464	446	327	1242	1842	1692	637	810
MINNEAPOLIS, MINN.	907	862	384	1123	731	755	642	355	630	998	862	700	235	543	1157	912	1056	511	1191	413	708	1524	605	1511	299		697	1051	1018	1047	985	1280	743	466	987	1584	1395	934	1100
NASHVILLE, TENN.	214	182	1030	943	627	322	1032	397	459	358	617	1023	525	470	1169	1488	665	251	499	473	325	1780	154	815	478	697		469	761	586	685	1446	472	254	1393	1963	1975	569	517
NEW ORLEANS, LA.	424	312	1297	1359	1086	754	1131	833	924	599	443	1082	827	939	983	1646	318	712	504	680	355	1673	623	669	910	1051	469		1171	926	1089	1316	919	598	1434	1926	2101	966	769
NEW YORK, N. Y.	748	864	1396	188	292	440	1604	713	405	605	1374	1631	1022	482	1905	1929	1420	646	838	1097	1081	2451	652	1092	733	1018	761	1171		296	83	2145	317	875	1972	2571	2408	205	499
NORFOLK, VA.	505	638	1430	471	947	311	1556	699	432	332	1196	1566	983	522	1755	1947	1204	573	546	1009	909	2355	529	797	749	1047	586	926	296		222	2028	318	771	1927	2515	2436	146	203
PHILADELPHIA, PA.	666	783	1367	271	279	365	1556	666	360	523	1299	1579	973	443	1836	1897	1341	585	758	1038	1007	2394	582	1019	694	985	685	1089	83	222		2083	259	811	1925	2523	2380	123	423
PHOENIX, ARIZONA	1592	1456	1095	2300	1906	1733	663	1453	1749	1781	887	586	1155	1690	346	907	1017	1499	1794	1049	1137	357	1508	1982	1464	1280	1446	1316	2145	2028	2083		1828	1272	504	653	1114	1983	1954
PITTSBURGH, PA.	521	608	1127	483	178	168	1298	410	115	448	1070	1320	715	205	1590	1652	1137	330	703	781	779	2136	344	1010	446	743	472	919	317	318	259	1828		559	1668	2264	2138	192	442
ST. LOUIS, MO.	467	400	779	1038	662	465	795	262	492	603	547	796	273	455	1034	1236	679	231	751	238	291	1589	242	1061	327	466	254	598	875	771	811	1272	559		1162	1744	1724	712	746
SALT LAKE CITY, UTAH	1583	1466	694	2099	1699	1616	371	1260	1568	1751	999	371	953	1492	689	403	1200	1356	1837	925	1148	579	1402	2089	1242	987	1393	1434	1972	1927									





# HENRY

## HAS

Henry Radio stores in Butler, Missouri and 11240 West Olympic Blvd., Los Angeles, California have complete stocks of all Collins amateur equipment for immediate delivery. Also complete stocks of all other amateur receivers, transmitters, and parts. Also TV receivers and equipment. I promise you that you can find nowhere else lower prices, more complete stocks, quicker delivery, easier terms or more generous trade-ins. I give you 10-day free trial and 90-day free service. I promise that you will be satisfied on every detail. Write, wire, phone or visit either store today.

*Bob Henry*  
W4ARA

### A FEW ITEMS WE STOCK ARE:

National NC-183B	279.00
National HRO-50	359.00
National SW-54	49.95
Hallicrafters S38-B	49.50
Hallicrafters S40-B	99.95
Hallicrafters S72	109.95
Hallicrafters SX71	199.50
Hallicrafters SX62	289.50
Hallicrafters HT18	110.00
Hallicrafters SR-75	89.95
Hallicrafters S-76	169.50
Hallicrafters S-72L	119.95
Hammarlund HQ129X	199.50
Hammarlund SP600X	595.00
RME DB22A	86.00
RME HF-10-20	92.00
RME VHF-152A	97.00
Harvey-Wells Bandmaster Jr.	87.50
Harvey-Wells Bandmaster Sr.	111.50
Harvey-Wells Bandmaster Deluxe	137.50
Johnson Viking 1 kit	209.50
Johnson Viking 1 wired	234.50
National and Hallicrafter and other TV receivers	

Some prices higher on west coast

Gonset, Stancor, Millen, National, Hallicrafters, RME, Bud, Vibroplex, Monkey, B & W, Johnson, RCA, Hy-Lite, Workshop, Elincor, Jensen, Eimac, UTC, Thordarson, Astatic, Turner, Bliley; I have everything for the amateur.



### FOR EXAMPLE:

Collins 75A-2	\$420.00
Collins 32V-2	575.00
Collins 148B-1 FM adapter	31.75

### COMPLETE STOCKS

Henry has *everything* in the ham field.

### QUICK DELIVERY

Shipments 4 hours after receipt of order. Send \$5.00 with order and shipment will be made at once C.O.D.

### TRADE-INS

You can't beat Bob Henry for trade-ins. Write, wire or phone today about your equipment and Bob Henry will make you a better offer than you can get anywhere else.

### TIME PAYMENT

Because Bob Henry finances the terms himself you get a better break. Save time and money, deal with Bob Henry on his personal, profitable time payment plan.

Butler, Missouri

# HENRY RADIO STORES

11240 Olympic Blvd.  
LOS ANGELES 25  
CALIF.

"WORLD'S LARGEST DISTRIBUTORS OF SHORT WAVE RECEIVERS"



# INTERNATIONAL RADIO AMATEUR PREFIXES

The following prefixes are listed in alphabetical order for convenience in locating the country when DX calls are heard. Figures in parentheses ( ) show the amount of postage required when mailing from the United States and possessions. The first figure is for letters, (first ounce or fraction), and the second figure for post cards or QSL cards.

AC3 (5, 3)	SIKKIM	KG6I (3, 1)	TWO JIMA ISLAND	UR (5, 3)	ESTONIA
AC4 (5, 3)	TIBET	KG6S (3, 1)	SAIPAN ISLAND	VE (3, 2)	CANADA
AG2 (5, 3)	TRIESTE (American)	KG6T (3, 1)	TINIAN ISLAND	VK (5, 3)	AUSTRALIA
AP (5, 3)	PAKISTAN	KH6 (3, 1)	HAWAIIAN ISLANDS	VK7 (5, 3)	TASMANIA
AR8 (5, 3)	LEBANON REPUBLIC	KJ6 (3, 1)	JOHNSTON ISLAND	VK9 (5, 3)	PAPUA TERRITORY
C (5, 3)	CHINA	KL7 (3, 1)	ALASKA	VO (3, 2)	NEWFOUNDLAND & LABRADOR
CE (3, 2)	CHILE	KM6 (3, 1)	MIDWAY ISLAND	VP1 (5, 3)	BRITISH HONDURAS
CM-CO (3, 2)	CUBA	KP4 (3, 1)	PUERTO RICO	VP2 (5, 3)	LEEWARD & WINDWARD ISLANDS
CN8 (5, 3)	FRENCH MOROCCO	KP6 (3, 1)	PALMYRA & JARVIS ISLANDS	VP3 (5, 3)	BRITISH GUIANA
CP (3, 2)	BOLIVIA	KR6 (3, 1)	OKINAWA	VP4 (5, 3)	TRINIDAD & TOBAGO IS.
CR4 (5, 3)	CAPE VERDE ISLANDS	KS4 (3, 1)	SWAN ISLAND	VP5 (5, 3)	JAMAICA, CAYMAN, TURKS & CAICOS IS.
CR5 (5, 3)	PORTUGUESE GUINEA	KS6 (3, 1)	U. S. SAMOA	VP6 (5, 3)	BARBADOS
CR6 (5, 3)	ANGOLA	KV4 (3, 1)	VIRGIN ISLANDS	VP7 (5, 3)	BAHAMA ISLANDS
CR7 (5, 3)	MOZAMBIQUE	KW6 (3, 1)	WAKE ISLAND	VP8 (5, 3)	FALKLAND ISLANDS, South Georgia, South Orkney and South Shetland Islands.
CR8 (5, 3)	GOA (Portuguese India)	KX6 (5, 3)	MARSHALL ISLANDS	VP9 (5, 3)	BERMUDA ISLANDS
CR9 (5, 3)	MACAU	KZ5 (3, 1)	CANAL ZONE	VQ1 (5, 3)	ZANZIBAR
CR10 (5, 3)	TIMOR ISLAND (Port.)	LA (5, 3)	NORWAY	VQ2 (5, 3)	NORTHERN RHODESIA
CT1 (5, 3)	PORTUGAL	LI (5, 3)	LIBYA	VQ3 (5, 3)	TANGANYIKA TERRITORY
CT2 (5, 3)	AZORES ISLANDS	LU (3, 2)	ARGENTINA	VQ4 (5, 3)	KENYA
CT3 (5, 3)	MADERIA ISLANDS	LX (5, 3)	LUXEMBOURG	VQ5 (5, 3)	UGANDA
CX (3, 2)	URUGUAY	LZ (5, 3)	BULGARIA	VQ6 (5, 3)	BRITISH SOMALILAND
CZ (5, 3)	MONACO	MB9 (5, 3)	AUSTRIA	VQ8 (5, 3)	CHAGOS & MAURITIUS ISLANDS
DL (5, 3)	GERMANY	MD1 (5, 3)	CIRENAICA	VQ9 (5, 3)	SEYCHELLES
DU (3, 2)	PHILIPPINE ISLANDS	MD2 (5, 3)	TRIPOLITANIA	VR1 (5, 3)	GILBERT, ELLICE & OCEAN ISLANDS
EA (3, 2)	SPAIN	MD3 (5, 3)	ERITREA	VR2 (5, 3)	FIJI ISLANDS
EA6 (3, 2)	BALEARIC ISLANDS	MD4 (5, 3)	SOMALIA	VR3 (5, 3)	FANNING ISLAND
EA8 (3, 2)	CANARY ISLANDS	MD5 (5, 3)	SUEZ CANAL ZONE	VR4 (5, 3)	SOLOMON ISLANDS
EA9 (3, 2)	SPANISH MOROCCO	MD6 (5, 3)	IRAQ	VR5 (5, 3)	TONGA (Friendly) ISLAND
EI (5, 3)	IRELAND	MD7 (5, 3)	CYPRUS	VR6 (5, 3)	PITCAIRN ISLAND
EK1 (5, 3)	TANGIER ZONE	MF2 (5, 3)	TRIESTE (British)	VS1 (5, 3)	SINGAPORE
EL (5, 3)	LIBERIA	MI3 (5, 3)	ERITREA	VS2 (5, 3)	MALAYAN UNION
EP, EQ (5, 3)	IRAN (ex Persia)	MP4 (5, 3)	BAHRAIN IS. & OMAN	VS4 (5, 3)	BRITISH NORTH BORNEO
ET (5, 3)	ETHIOPIA	OA (3, 2)	PERU	VS5 (5, 3)	BRUNEI & SARAWAK
F (5, 3)	FRANCE	OH (5, 3)	FINLAND	VS6 (5, 3)	HONG KONG
FA (5, 3)	ALGERIA	OE (5, 3)	AUSTRIA	VS7 (5, 3)	CEYLON
FB8 (5, 3)	MADAGASCAR	OK (5, 3)	CZECHOSLOVAKIA	VS9 (5, 3)	ADEN & SOCOTRA ISLANDS
FC (5, 3)	CORSICA	ON (5, 3)	BELGIUM	VU (5, 3)	INDIA
FD8 (5, 3)	FRENCH TOGOLAND	OQ5 (5, 3)	BELGIAN CONGO	VU4 (5, 3)	LACCADIVE ISLANDS
FE8 (5, 3)	FRENCH CAMEROONS	OX (5, 3)	GREENLAND	VU5 (5, 3)	ANDAMAN ISLANDS
FF8 (5, 3)	FRENCH WEST AFRICA	OY (5, 3)	FAEROES ISLANDS	W (3, 1)	UNITED STATES
FG8 (5, 3)	GUADELOUPE	OZ (5, 3)	DENMARK	XE (3, 2)	MEXICO
FI8 (5, 3)	FRENCH INDO-CHINA	PA, PI (5, 3)	NETHERLANDS	XZ (5, 3)	BURMA
FKS (5, 3)	FRENCH-AUSTRIA	PJ (5, 3)	NETH. WEST INDIES	YA (5, 3)	AFGHANISTAN
FK8 (5, 3)	NEW CALEDONIA	PK1, 2, 3 (5, 3)	JAVA	YI (5, 3)	IRAQ
FL8 (5, 3)	FRENCH SOMALILAND	PK4 (5, 3)	SUMATRA	YJ (5, 3)	NEW HEBRIDES
FM8 (5, 3)	MARTINIQUE	PK5 (5, 3)	BORNEO (Neth. Indies)	YK (5, 3)	SYRIA
FN (5, 3)	FRENCH INDIA	PK6 (5, 3)	CELEBES & MOLUCCA IS., & NETHERLAND NEW GUINEA	YN (3, 2)	NICARAGUA
FO8 (5, 3)	TAHITI	PK7 (5, 3)	ANDORRA	YR (5, 3)	ROUMANIA
FP8 (5, 3)	MIQUELON & ST. PIERRE IS.	PX (5, 3)	BRAZIL	YS (3, 2)	SALVADOR
FQ8 (5, 3)	FRENCH EQUATORIAL AFRICA	PY (3, 2)	SURINAM	YT, YU (5, 3)	YUGOSLAVIA
FR8 (5, 3)	REUNION ISLAND	PZ (5, 3)	SWEDEN	YV (3, 2)	VENEZUELA
FU8 (5, 3)	NEW HEBRIDES	SM (5, 3)	POLAND	ZA (5, 3)	ALBANIA
FY7 (5, 3)	FRENCH GUIANA	ST (5, 3)	SUDAN	ZB1 (5, 3)	MALTA
G (5, 3)	ENGLAND	SU (5, 3)	EGYPT	ZB2 (5, 3)	GIBRALTAR
GC (5, 3)	CHANNEL ISLANDS	SV (5, 3)	CRETE & GREECE	ZC1 (5, 3)	TRANSJORDAN
GD (5, 3)	ISLE OF MAN	SV5 (5, 3)	DODECANESE ISLANDS	ZC2 (5, 3)	COCOS ISLANDS
GI (5, 3)	NORTHERN IRELAND	TA (5, 3)	TURKEY	ZC3 (5, 3)	CHRISTMAS ISLAND
GM (5, 3)	SCOTLAND	TF (5, 3)	ICELAND	ZC4 (5, 3)	CYPRUS
GW (5, 3)	WALES	TG (3, 2)	GUATEMALA	ZD1 (5, 3)	SIERRA LEONE
HA (5, 3)	HUNGARY	TI (3, 2)	COSTA RICA	ZD2 (5, 3)	NIGERIA
HB (5, 3)	SWITZERLAND	TR (5, 3)	LIBYA	ZD3 (5, 3)	GAMBIA
HC (3, 2)	ECUADOR	TT (5, 3)	TANNU TUVA	ZD4 (5, 3)	GOLD COAST & TOGOLAND
HE1 (5, 3)	LIECHTENSTEIN	UA1-3-4-6 (5, 3)	EUROPEAN RUSSIAN SOCIALIST FEDERATED SOVIET REPUBLIC	ZD6 (5, 3)	NYASALAND
HH (3, 2)	HAITI	UA9-φ (5, 3)	ASIATIC RUSSIAN S. F. S. R.	ZD7 (5, 3)	SAINT HELENA
HI (3, 2)	DOMINICAN REPUBLIC	UB5 (5, 3)	UKRAINE	ZD8 (5, 3)	ASCENSION ISLAND
HK (3, 2)	COLOMBIAN REPUBLIC	UC5 (5, 3)	WHITE RUSSIAN S.S.R.	ZD9 (5, 3)	TRISTAN DA CUNHA
HL1 (5, 3)	KOREA	UD6 (5, 3)	AZERBAIJAN	ZE (5, 3)	SOUTHERN RHODESIA
HP (3, 2)	PANAMA	UF6 (5, 3)	GEORGIA	ZK1 (5, 3)	COOK ISLANDS
HR (3, 2)	HONDURAS	UG6 (5, 3)	ARMENIA	ZK2 (5, 3)	NIUE
HS (5, 3)	SIAM	UH8 (5, 3)	TURKOMAN	ZL (5, 3)	NEW ZEALAND
HV (5, 3)	VATICAN CITY	UI8 (5, 3)	UZBEK	ZM (5, 3)	WESTERN SAMOA
HZ (5, 3)	SAUDI ARABIA	UJ8 (5, 3)	TADZHIK	ZP (3, 2)	PARAGUAY
I (5, 3)	ITALY	UL7 (5, 3)	KAZAKH	ZS (5, 3)	UNION OF SOUTH AFRICA
JA (5, 3)	JAPAN	UM8 (5, 3)	KIRGHIZ	3V8 (5, 3)	TUNISIA
K (3, 1)	UNITED STATES	UN1 (5, 3)	KARELO-FINNISH REPUBLIC	4X4 (5, 3)	ISRAEL
KB6 (5, 3)	BAKER, CANTON, ENDERBURY, HOWLAND & PHOENIX ISLANDS	UO5 (5, 3)	MOLDAVIA	9S4 (5, 3)	SAARLAND
KC4 (5, 3)	ANTARCTICA	UP (5, 3)	LITHUANIA		
KC6 (3, 1)	CAROLINE ISLANDS	UQ (5, 3)	LATVIA		
KG4 (3, 1)	GUANTANAMO BAY, CUBA				
KG6 (3, 1)	MARIANA ISLANDS (Guam)				



**SEND  
FOR IT!**

# 1951 ALLIED CATALOG

## COMPLETE • UP-TO-DATE

### 212 Value-Packed Pages



**YOUR BUYING GUIDE FOR ALL  
THE NEWEST STATION GEAR...**



### ALLIED Gives You Every Buying Advantage

- World's Largest Amateur Stocks
- A Real Break on Time Payments
- A Square Deal on Trade-Ins
- Fastest Service on All Orders
- Ham-to-Ham Personal Help

### Your Buying Guide for Everything in Radio, Television and Industrial Electronics

You can depend on your *complete* ALLIED Catalog not only to meet *all* your station needs but to provide you with *everything in electronic supplies*—always at lowest prevailing prices. Your ALLIED catalog brings you the world's largest stocks of special tubes, parts, test instruments, audio equipment, recorders, radio and TV components. And ALLIED gives you the advantages of speedy delivery, expert personal help and lowest prices. Save time, effort and money—use the *only complete source* for all your electronic supply needs—dependable ALLIED RADIO.

# ALLIED RADIO

833 W. Jackson Blvd., Chicago 7, Illinois

*Everything for the Ham*

**FREE**

**Send for  
ALLIED'S  
NEW 1951  
CATALOG  
No. 126  
Keep it handy**





# PREFIXES—BY COUNTRIES

The following countries listed in alphabetical order by country show international radio amateur prefixes. Characters in ( ) designate the continent and zone in which the country is located. Abbreviations are as follows: A—Asia, AF—Africa, E—Europe, NA—North America, O—Oceania, SA—South America.

ADEN (A-21) VS9	GUADELOUPE (NA-8) FG8	RHODESIA, NORTHERN (AF-36) VQ2
AFGHANISTAN (A-21) YA	GUAM (O-27) KG6	RHODESIA, SOUTHERN (AF-38) ZE
ALASKA (NA-1) KL7	GUANTANAMO BAY (NA-8) KG4	ROUMANIA (E-20) YR
ALBANIA (E-15) ZA	GUATEMALA (NA-7) TG	RYUKYU ISLANDS (A25) KR6
ALGERIA (AF-33) FA	GUIANA, BRITISH (SA-9) VP3	
ANDORRA (E-14) PX	GUIANA, FRENCH (SA-9) FY7	SAARLAND (E-14) 9S4
ANGLO-EGYPTIAN SUDAN (AF-34) ST	GUIANA, NETHERLANDS (SA-9) PZ	SAINT HELENA (AF-36) ZD7
ANGOLA (AF-36) CR6	GUINEA, PORTUGUESE (AF-35) CR5	SAIPAN ISLAND (O-27) KG6S
ARGENTINA (SA-13) LU		SALVADOR (NA-7) YS
ASCENSION ISLAND (AF-36) ZD8	HAITI (NA-8) HH	SAMOA (U.S.) (O-32) KS6
AUSTRALIA (O-29 & 30) VK	HAWAIIAN ISLANDS (O-31) KH6	SAMOA (Western) (O-32) ZM
AUSTRIA (E-15) OE	HONDURAS (NA-7) HR	SARAWAK (O-28) VS5
AZORES ISLANDS (E-14) CT2	HONG KONG (A-24) VS6	SAUDI ARABIA (A-21) HZ
	HOWLAND ISLAND (O-31) KB6	SCOTLAND (E-14) GM
BAHAMA ISLANDS (NA-8) VP7	HUNGARY (E-15) HA	SEYCHELLES (AF-39) VQ9
BAHREIN ISLANDS (AF-21) MP4	ICELAND (E-40) TF	SIAM (A-26) HS
BAKER ISLAND (O-31) KB6	INDIA (A-21) VU	SIERRA LEONE (AF-35) ZD1
BALEARIC ISLANDS (E-14) EA6	IRAN (A-21) EP, EQ	SIKKIM (A-22) AC3
BARBADOS (NA-8) VP6	IRAQ (A-21) YI	SOCOTRA ISLAND (AF-37) VS9
BASUTOLAND (AF-38) ZS4	IRELAND (E-14) EI	SOLOMON ISLANDS (O-28) VR4
BELGIAN CONGO (AF-36) OQ	ISLE OF MAN (E-14) GD	SOMALILAND, British (AF-37) VQ6
BELGIUM (E-14) ON	ISRAEL (A-20) 4X4	SOMALILAND, French (AF-37) FL8
BERMUDA ISLANDS (NA-5) VP9	ITALY (E-15) I	SOMALILAND, Italian (AF-37) MD4
BOLIVIA (SA-10) CP	IWO JIMA ISLAND (O-25) KG6I	SOUTH GEORGIA (SA-13) VP8
BORNEO (Br. North) (O-28) VS4	JAMAICA (NA-8) VP5	SOUTH ORKNEY ISLANDS (SA-13) VP8
BORNEO (Neth. Indies) (O-28) PK5	JAN MAYEN ISLAND (E-40) OY	SOUTH SANDWICH ISLANDS (SA-13) VP8
BRAZIL (SA-11) PY	JAPAN (A-25) JA	SOUTH SHETLAND ISLANDS (SA-13) VP8
BRITISH HONDURAS (NA-7) VP1	JARVIS ISLAND (O-31) KP6	SOUTHWEST AFRICA (AF-38) ZS3
BRUNEI (O-28) VS5	JAVA (O-28) PK1, 2, 3	
BULGARIA (E-20) LZ	JOHNSTON ISLAND (O-31) KJ6	SOVIET UNION:
BURMA (A-26) XZ		EUROPEAN RUSSIAN SOCIALIST
CAMEROONS, British (AF-36) ZD2	KENYA (AF-37) VQ4	FEDERATED SOVIET REP. (E-16) UA1, 3, 4, 6
CAMEROONS, French (AF-36) FE8	KOREA (A-25) HL1	ASIATIC RUSSIAN S.F.S.R. (A-18, 19) UA9, 4
CANADA (NA-1 to 5) VE	LABRADOR (NA-2) VO	UKRAINE (E-16) UB5
CANAL ZONE (NA-7) KZ5	LACCADIVE ISLANDS (A-22) VU4	WHITE RUSSIAN S.S.R. (E-16) UC
CANARY ISLANDS (AF-33) EA8	LEBANON REPUBLIC (A-20) AR8	AZERBAIJAN (A-21) UD6
CANTON ISLAND (O-31) KB6	LEEWARD ISLANDS (NA-8) VP2	GEORGIA (A-21) UF6
CAPE VERDE ISLANDS (AF-35) CR4	LIBERIA (AF-35) EL	ARMENIA (A-21) UG6
CAROLINE ISLANDS (O-27) KC6	LIBYA (AF-34) TR	TURKOMAN (A-17) UH8
CAYMAN ISLANDS (NA-8) VP5	LIECHTENSTEIN (E-14) HE1	UZBEK (A-17) U18
CELEBES (O-28) PK6	LITTLE AMERICA (SA-13) KC4	TADZHIK (A-17) U18
CEYLON (A-22) VS7	LUXEMBOURG (E-14) LX	KAZAKH (A-17) UL7
CHAGOS ISLANDS (AF-39) VQ8		KIRGHIZ (A-17) UM8
CHANNEL ISLANDS (E-14) GC	MACAU (A-24) CR9	KARELO-FINNISH REP. (E-16) UN1
CHILE (SA-12) CE	MADAGASCAR (AF-39) FB8	MOLDAVIA (E-16) UO5
CHINA (A-23 & 24) C	MADEIRA ISLANDS (AF-33) CT3	LITHUANIA (E-15) UP
CHRISTMAS ISLAND (O-31) ZC3	MALAYA (A-28) VS1, 2	LATVIA (E-15) UQ
COCOS ISLAND (NA-7) TI	MALDIVES ISLANDS (E-22) VS9	ESTONIA (E-15) UR
COCOS ISLANDS (O-29) ZC2	MALTA (E-15) ZB1	SPAIN (E-14) EA
COLOMBIA (SA-9) HK	MARIANAS ISLANDS (O-27) KG6	SUMATRA (O-28) PK4
COOK ISLANDS (O-32) ZK1	MARSHALL ISLANDS (O-31) KX6	SWAN ISLAND (NA-7) KS4
CORSICA (E-15) FC	MARTINIQUE (NA-8) FM8	SWEDEN (E-14) SM
COSTA RICA (NA-7) TI	MAURITIUS (AF-39) VQ8	SWITZERLAND (E-14) HB
CRETE (E-20) SV	MEXICO (NA-6) XE	SYRIA (A-20) YK
CUBA (NA-8) CM, CO	MIDWAY ISLAND (O-31) KM6	
CYPRUS (A-20) MD7 & ZC4	MIQUELON ISLAND (NA-5) FP8	TANGANYIKA (AF-37) VQ3
CZECHOSLOVAKIA (E-15) OK	MONACO (A-14) CZ	TANGIER ZONE (AF-33) EK
	MOROCCO, French (AF-33) CN	TANNU TUVA (A-23) TT
DENMARK (E-14) OZ	MOROCCO, Spanish (AF-33) EA9	TIBET (A-23) AC4
DODECANESE ISLANDS (E-20) SV5	MOZAMBIQUE (AF-37) CR7	TIMOR, Portuguese (O-28) CR10
DOMINICAN REPUBLIC (NA-8) HI		TINIAN ISLAND (O-27) KG6T
ECUADOR (SA-10) HC	NETHERLANDS (E-14) PA	TOGOLAND, French (AF-35) FD8
EGYPT (AF-34) SU	NETHERLAND W. INDIES (SA-9) PJ	TONGA (Friendly) ISLANDS (O-32) VR5
ELICE ISLANDS (O-31) VR1	NEW CALEDONIA (O-32) FK8	TRANSJORDAN (A-20) ZC1
ENGLAND (E-14) G	NEWFOUNDLAND (NA-5) VC	TRIESTE (E-15) AG2 & MF2
ERITREA (AF-37) MD3 & M13	NEW GUINEA, Netherlands (O-28) PK6	TRINIDAD & TOBAGO (SA-9) VP4
ETHIOPIA (AF-37) ET	NEW GUINEA, Territory of (O-28) VK9	TRISTAN da CUNHA & COUGH ISLAND (AF-38) ZD9
	NEW HEBRIDES (O-32) FUS, YJ	TUNISIA (AF-33) 3V8
FAEROES, The (E-14) OY	NEW ZEALAND (O-32) ZL	TURKEY (A-20) TA
FALKLAND ISLANDS (SA-13) VP8	NICARAGUA (NA-7) YN	TURKS & CAICOS ISLANDS (NA-8) VP5
FANNING ISLAND (O-31) VR3	NIGERIA (AF-35) ZD2	
FIJI ISLANDS (O-32) VR2	NIUE (O-32) ZK2	UGANDA (AF-37) VQ5
FINLAND (E-15) OH	NORTHERN IRELAND (E-14) GI	UNION OF SOUTH AFRICA (AF-38) ZS
FRANCE (E-14) F	NORWAY (E-14) LA	UNITED STATES of AMERICA (NA-3, 4, 5) W, K
FRENCH-AUSTRIA (E-15) FKS	NYASALAND (AF-37) ZD6	URUGUAY (SA-13) CX
FR. EQUATORIAL AFRICA (AF-36) FQ8	OKINAWA (A-25) KR6	
FRENCH INDIA (A-22) FN	OMAN (A-21) MP4	VATICAN CITY (E-15) HV
FRENCH INDO-CHINA (A-26) F18	PAKISTAN (A-21, 22) AP	VENEZUELA (SA-9) YV
FRENCH OCEANIA (O-32) FO8	PANAMA (NA-7) HP	VIRGIN ISLANDS (NA-8) KV4
FRENCH WEST AFRICA (AF-35) FF8	PAPUA TERRITORY (O-28) VK9	
	PARAGUAY (SA-11) ZP	WAKE ISLAND (O-31) KW6
GAMBIA (AF-35) ZD3	PERU (SA-10) OA	WALES (E-14) GW
GERMANY (E-14) DL	PHILIPPINE ISLANDS (O-27) DU	WINDWARD ISLANDS (NA-8) VP2
GIBRALTAR (E-14) ZB2	PITCAIRN ISLAND (O-32) VR6	
GILBERT ISLANDS (O-31) VR1	POLAND (E-15) SP	YUGOSLAVIA (E-15) YT, YU
GOA (Portuguese India) (A-22) CR8	PORTUGAL (E-14) CT1	
GOLD COAST (AF-35) ZD4	PUERTO RICO (NA-8) KP4	ZANZIBAR (AF-37) VQ1
GREECE (E-20) SV	REUNION ISLAND (AF-39) FR8	
GREENLAND (NA-40) OX		





# COMPONENTS FOR EVERY APPLICATION



**LINEAR STANDARD**  
High Fidelity Ideal



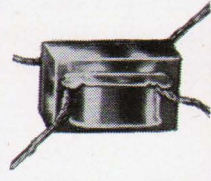
**HIPERM ALLOY**  
High Fidelity . . . Compact



**ULTRA COMPACT**  
Portable . . . High Fidelity



**OUNCER**  
Wide Range . . . 1 ounce



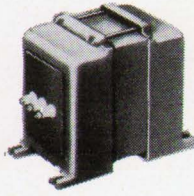
**SUB OUNCER**  
Weight 1/2 ounce



**COMMERCIAL GRADE**  
Industrial Dependability



**SPECIAL SERIES**  
Quality for the "Ham"



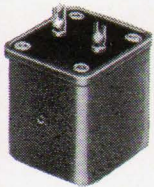
**POWER COMPONENTS**  
Rugged . . . Dependable



**VARITRAN**  
Voltage Adjustors



**MODULATION UNITS**  
One watt to 100KW



**VARIABLE INDUCTOR**  
Adjust like a Trimmer



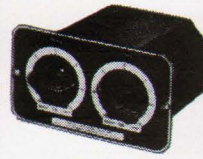
**TOROID HIGH Q COILS**  
Accuracy . . . Stability



**TOROID FILTERS**  
Any type to 300KC



**MU-CORE FILTERS**  
Any type 1/2 - 10,000 cyc.



**EQUALIZERS**  
Broadcast & Sound



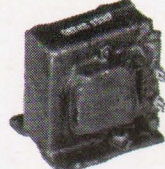
**PULSE TRANSFORMERS**  
For all Services



**HERMETIC COMPONENTS**  
Ceramic Terminals



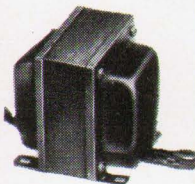
**HERMETIC COMPONENTS**  
Glass Terminals



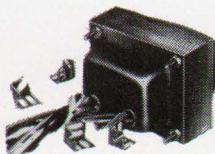
**GRADE 3 JAN**  
Components



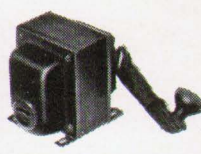
**CABLE TYPE**  
For mike cable line



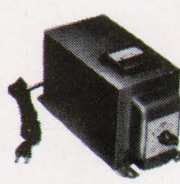
**VERTICAL SHELLS**  
Husky . . . Inexpensive



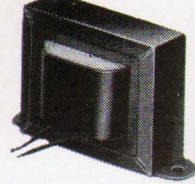
**REPLACEMENT**  
Universal Mounting



**STEP-DOWN**  
Up to 2500W . . . Stock



**LINE ADJUSTORS**  
Match any line voltage



**CHANNEL FRAME**  
Simple . . . Low cost

*United Transformer Co.*

150 VARICK STREET

NEW YORK 13, N. Y.

EXPORT DIVISION: 13 EAST 40th STREET, NEW YORK 16, N. Y. CABLES: "ARLAB"



# POSTAL INFORMATION

The following table shows the postal rates for QSL cards, first class letters and air mail to the United States Possessions and foreign countries. There is on sale at Government Post Offices, an air-letter sheet which folds into the form of an envelope, with printed postage stamp and air mail markings. Air-letter sheets are sold for ten cents each and may be sent to all foreign countries. No enclosures are permitted. Air-letter sheets may not be registered. The first class rates show the rate for the first ounce. Add three cents each for each additional ounce or fraction. The air mail rates are for each half ounce except where indicated.

COUNTRY	QSL cards	First class	Air mail	COUNTRY	QSL cards	First class	Air mail	COUNTRY	QSL cards	First class	Air mail
ADEN	.03	\$.05	\$.25	FRENCH OCEANIA	.03	.05	.25	NORWAY	.03	.05	.15
AFGHANISTAN	.03	.05	.25	FRENCH SOMALILAND	.03	.05	.25	NYASALAND	.03	.05	.25
ALASKA	.01	.03	.06*	FRENCH SUDAN	.03	.05	.25	OKINAWA	.03	.05	.25
ALBANIA	.03	.05	.15	FRENCH TOGOLAND	.03	.05	.25	PAKISTAN	.03	.05	.25
ALGERIA	.03	.05	.15	GAMBIA	.03	.05	.25	PANAMA	.02	.03	.10
ANDORRA	.02	.30	.15	GERMANY	.03	.05	.15	PAPUA	.03	.05	.25
ANGLO-EGYPTIAN SUDAN	.03	.05	.25	GIBRALTAR	.03	.05	.15	PARAGUAY	.02	.03	.10
ANGOLA	.03	.05	.25	GILBERT & ELLICE IS.	.03	.05	.25	PERU	.02	.03	.10
ANGUILLA	.03	.05	.10	GOLD COAST COLONY	.03	.05	.25	PHILIPPINE IS.	.02	.03	.25
ANTIGUA	.03	.05	.10	GREECE	.03	.05	.15	POLAND	.03	.05	.15
ARGENTINA	.02	.03	.10	GRENADA, BWI	.03	.05	.10	PORTUGAL	.03	.05	.15
ARUBA	.03	.05	.10	GRENADINES, BWI	.03	.05	.10	PORT. EAST AFRICA	.03	.05	.25
AUSTRALIA	.03	.05	.25	GUADELOUPE	.03	.05	.10	PORTUGUESE GUINEA	.03	.05	.25
AUSTRIA	.03	.05	.15	GUAM	.01	.03	.06*	PORTUGUESE INDIA	.03	.05	.25
AZORES	.03	.05	.15	GUATEMALA	.02	.03	.10	PORTUGUESE TIMOR	.03	.05	.25
BAHAMAS	.03	.05	.10	HAITI	.02	.03	.10	PORTUGUESE W. AFRICA	.03	.05	.25
BAHREIN ISLANDS	.03	.05	.25	HAWAII	.01	.03	.06*	PUERTO RICO	.01	.03	.06*
BALEARIC ISLANDS	.02	.03	.15	HONDURAS	.02	.03	.10	REDONDA, BWI	.03	.05	.10
BALUCHISTAN	.03	.05	.25	HONG KONG	.03	.05	.25	REUNION ISLAND	.03	.05	.25
BARBADOS	.03	.05	.10	HUNGARY	.03	.05	.15	RIO DE ORO	.02	.03	.25
BARBUDA	.03	.05	.10	ICELAND	.03	.05	.15	ROMANIA	.03	.05	.15
BECHUANALAND	.03	.05	.25	INDIA	.03	.05	.25	RYUKYU ISLANDS	.03	.05	.25
BELGIAN CONGO	.03	.05	.25	INDONESIA	.03	.05	.25	ST CHRISTOPHER, BWI	.03	.05	.10
BELGIUM	.03	.05	.15	IRAN	.03	.05	.25	ST HELENA	.03	.05	.25
BERMUDA	.03	.05	.10	IRAQ	.03	.05	.25	ST KITS, BWI	.03	.05	.10
BOLIVIA	.02	.03	.10	ITALY	.03	.05	.15	ST LUCIA, BWI	.03	.05	.10
BRAZIL	.02	.03	.10	ITALIAN SOMALILAND	.03	.05	.25	ST PIERRE & MIQUELON	.03	.05	.08*
BRITISH CAMEROONS	.03	.05	.25	IVORY COAST	.03	.05	.25	ST VINCENT, BWI	.03	.05	.10
BRITISH GUIANA	.03	.05	.10	JAMAICA	.03	.05	.10	SALVADOR	.02	.03	.10
BRITISH HONDURAS	.03	.05	.10	JAPAN	.03	.05	.25	SAMOA (Br.)	.03	.05	.25
BRITISH SOMALILAND	.03	.05	.25	JORDAN	.03	.05	.25	SAN MARINO	.03	.05	.15
BR. VIRGIN ISLANDS	.03	.05	.10	KENYA & UGANDA	.03	.05	.25	SARAWAK	.03	.05	.25
BRUNEI	.03	.05	.25	KOREA	.03	.05	.25	SAUDI ARABIA	.03	.05	.25
BULGARIA	.03	.05	.15	LABUAN	.03	.05	.25	SCOTLAND	.03	.05	.15
BURMA	.03	.05	.25	LATVIA	.03	.05	.15	SENEGAL	.03	.05	.25
CANADA	.02	.03	.06*	LEBANON	.03	.05	.25	SIAM	.03	.05	.25
CANAL ZONE	.01	.03	.06*	LIBERIA	.03	.05	.25	SIERRA LEONE	.03	.05	.25
CANARY ISLANDS	.02	.03	.25	LIBYA	.03	.05	.15	SOLOMON ISLANDS	.03	.05	.25
CANTON ISLAND	.01	.03	.06*	LIECHENSTEIN	.03	.05	.15	SOMALIA	.03	.05	.25
CAPE VERDE ISLANDS	.03	.05	.25	LITHUANIA	.03	.05	.15	SOUTHERN RHODESIA	.03	.05	.25
CEYLON	.03	.05	.25	LUXEMBOURG	.03	.05	.15	SOUTHWEST AFRICA	.03	.05	.25
CHILE	.02	.03	.10	MACAO	.03	.05	.25	SPAIN	.02	.03	.15
CHINA	.03	.05	.25	MADAGASCAR	.03	.05	.25	SPANISH GUINEA	.03	.05	.25
COLOMBIA	.02	.03	.10	MADIRA ISLANDS	.03	.05	.15	STRAIT SETTLEMENTS	.03	.05	.25
COOK ISLANDS	.03	.05	.25	MALAY STATES	.03	.05	.25	SURINAM	.03	.05	.10
CORSICA	.03	.05	.15	MALTA	.03	.05	.15	SWEDEN	.03	.05	.15
COSTA RICA	.02	.03	.10	MANCHURIA	.03	.05	.25	SWITZERLAND	.03	.05	.15
CUBA	.02	.03	.08	MARTINIQUE	.03	.05	.10	SYRIA	.03	.05	.25
CURACAO	.03	.05	.10	MAURITANIA	.03	.05	.25	TAIWAN (Formosa)	.03	.05	.25
CYPRUS	.03	.05	.25	MAURITIUS	.03	.05	.25	TANGANYIKA	.03	.05	.25
CYRENAICA	.03	.05	.15	MEXICO	.02	.03	.06*	TIBET	.03	.05	.25
CZECHOSLOVAKIA	.03	.05	.15	MIDWAY ISLAND	.01	.03	.06*	TONGA ISLANDS	.03	.05	.25
DAHOMY	.03	.05	.25	MONACO	.03	.05	.15	TRIESTE	.03	.05	.15
DENMARK	.03	.05	.15	MONTERRAT, BWI	.03	.05	.10	TRINIDAD	.03	.05	.10
DODECANESE IS.	.03	.05	.15	MOROCCO, (Br. & Fr.)	.03	.05	.15	TRIPOLITANIA	.03	.05	.15
DOMINICA	.03	.05	.10	MOROCCO, (Spain)	.02	.03	.15	TRISTAN DA CUNHA	.03	.05	.25
DOMINICAN REPUBLIC	.02	.03	.10	MOZAMBIQUE	.03	.05	.25	TUNISIA	.03	.05	.15
ECUADOR	.02	.03	.10	NAURU ISLAND	.03	.05	.25	TURKEY	.03	.05	.15
EGYPT	.03	.05	.15	NETHERLANDS	.03	.05	.15	TURKS ISLAND	.03	.05	.10
EIRE (Ireland)	.03	.05	.15	NETHERLANDS INDIES	.03	.05	.25	UGANDA	.03	.05	.25
ENGLAND	.03	.05	.15	NEVIS	.03	.05	.10	UNION OF SOUTH AFRICA	.03	.05	.25
ERITREA	.03	.05	.25	NEW CALEDONIA	.03	.05	.25	URUGUAY	.02	.03	.10
ESTONIA	.03	.05	.15	NEW FOUNDLAND	.02	.03	.06*	U.S.S.R.	.03	.05	.15
ETHIOPIA	.03	.05	.25	NEW GUINEA	.03	.05	.25	U. S. VIRGIN IS.	.01	.03	.06*
FALKLAND ISLANDS	.03	.05	.10	NEW HEBRIDES	.03	.05	.25	VATICAN CITY	.03	.05	.15
FAEROES ISLANDS	.03	.05	.15	NEW ZEALAND	.03	.05	.25	VENEZUELA	.02	.03	.10
FIJI ISLANDS	.03	.05	.25	NICARAGUA	.02	.03	.10	WAKE ISLAND	.01	.03	.06*
FINLAND	.03	.05	.15	NIGER	.03	.05	.25	YEMEN	.03	.05	.25
FRANCE	.03	.05	.15	NIGERIA	.03	.05	.25	YUGOSLAVIA	.03	.05	.15
FRENCH CAMEROONS	.03	.05	.25	NORTH BORNEO	.03	.05	.25	ZANZIBAR	.03	.05	.25
FRENCH EQ. AFRICA	.03	.05	.25	NORTHERN IRELAND	.03	.05	.15				
FRENCH GUIANA	.03	.05	.10	NORTHERN RHODESIA	.03	.05	.25				
FRENCH GUINEA	.03	.05	.25								
FRENCH INDO-CHINA	.03	.05	.25								
FRENCH INDIA	.03	.05	.25								

\* rate per ounce.



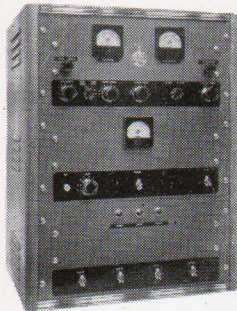
# We Have The Most Satisfied Customers

Ask the fellows who deal with me. They'll tell you that WRL will allow you more for your present equipment — that WRL's large volume of sales means faster turnover and greater savings. Our customers know that we finance our own paper, eliminating all red tape. We will accept a low down payment and you can name your own terms. WRL buys more equipment — WRL sells more equipment. We offer the most personalized service anywhere.



Leo I. Meyerson  
WØGFQ

LIBERAL  
TRADE-INS



## NEW WRL 400-A GLOBE KING TRANSMITTER

MORE WATTS  
PER DOLLAR

Efficient performance on all bands — 10 to 160 on phone and CW. 400 watts phone — 425 watts CW. Provisions for ECO. Complete with tubes, meters, and one set of coils.

KIT FORM WIRED  
\$439.45 \$459.45  
Low Down Payment



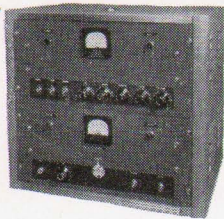
E-Z  
PAYMENTS

## WRL 175 WATT GLOBE CHAMPION TRANSMITTER

MORE WATTS  
PER DOLLAR

R.F. Section a complete 175 watt XMTR. Provisions for ECO. Automatic fixed bias on Final and Buffer. Class B Speech Modulator. 175 watt input — 10 thru 160 meter bands. Complete with tubes, meters.

KIT FORM WIRED  
\$279.00 \$299.00  
Low Down Payment



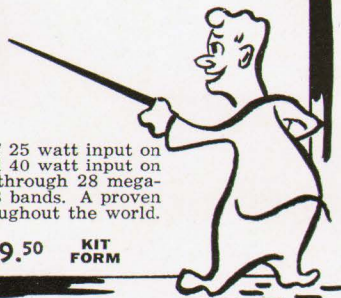
LOW  
DOWN  
PAYMENTS

## WRL "40" TROTTER TRANSMITTER



Capable of 25 watt input on phone and 40 watt input on CW on all bands from 1500 KC through 28 megacycles. Band switching for any 3 bands. A proven rig. Thousands in operation throughout the world.

\$89.50 WIRED \$79.50 KIT FORM



FREE  
CATALOG



## WRL 1951 CATALOG

Send for the new 1951 complete WRL catalog containing everything new in radio and television. Our new catalog is bigger than ever, jam-packed with bargains, completely indexed and arranged for quick easy reference. Send for your FREE catalog today!



## GIANT RADIO REFERENCE MAP



CU ON 10 - 20 & 75 METERS  
Just right for your control room walls. Approximately 28" X 36". Contains time zones, amateur zones, monitoring stations. Mail coupon today and...

25c

## WE FEATURE A COMPLETE LINE OF NATIONALLY FAMOUS RECEIVERS AND STANDARD RADIO PARTS

Choose from such famous names as RCA, Halicrafters, National Collins, Peterson, Thordarson, Hammarlund, Miller, RME, Meissner, Stancor, Hytron, Astatic, and a host of others. We also assemble the world famous WRL TRANSMITTERS delivering more watts per dollar and fully guaranteed. Write for detailed XMTR specification sheet.

THE WORLD'S LARGEST DISTRIBUTORS OF AMATEUR RADIO TRANSMITTING EQUIPMENT  
Special Attention Given to Foreign Orders Through Our Special Export Department.

CABLE ADDRESS WRLI

WRITE  
WIRE

World  
LABORATORIES  
COUNCIL BLUFFS,



Radio  
INCORPORATED  
IOWA

PHONE  
7795

WORLD RADIO LABORATORIES  
744 West Broadway  
Council Bluffs, Iowa

CB1-51

Please send me:  
☐ Radio Map  
☐ 1951 Catalog

☐ Globe King Info  
☐ Globe Champion Info  
☐ "40" Trotter Info

Name .....

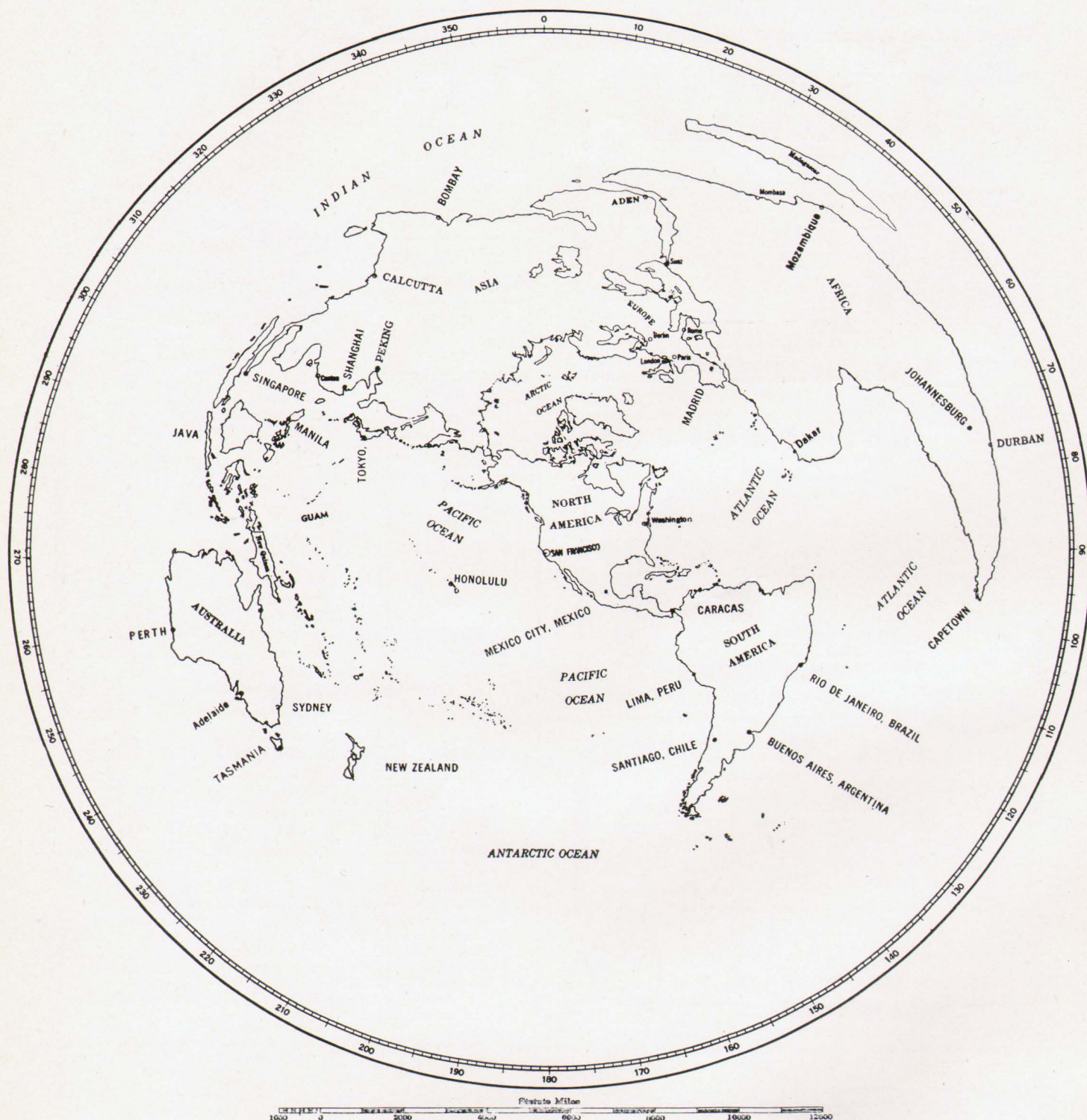
Address .....

City..... State.....



# CHART OF THE WORLD

Showing Great Circle Distances and Azimuths  
from San Francisco, Cal. to all Points on the Earth's Surface



To find the great circle bearing of any point in the world from San Francisco draw a straight line from the center and note the reading in degrees as indicated on the outer scale. The bar scale may be used to determine the approximate distance. This map was prepared by the Hydrographic Office of the U. S. Navy Department.



# What's New?

## IN RADIO, TV AND ELECTRONICS

# Ask Newark!

UP TO THE MINUTE EQUIPMENT

.....for the amateur  
and the industrial user

When the manufacturer announces it — Newark has it! By keeping constantly abreast of new electronics developments, Newark has always been the first to stock the new releases. Such recent innovations as the standing wave ratio bridge and TVI filters were first carried by Newark! For the latest in Ham gear, always look to Newark!

NEWARK carries the world's largest stock of radio, television and electronics supplies. If there is anything you need . . . from the smallest trimount to the tallest tower . . . we can supply it immediately!

NEWARK is the acknowledged leader in the distribution of electronics equipment, and many of our customers place their initial order because of our reputation for being the first with the latest. However our continued success is due largely to repeat business . . . from friends who have come to know that there is no substitute for . . .

#### NEWARK QUALITY

We carry only tested products of nationally-advertised, completely dependable manufacturers.

#### NEWARK SERVICE

Every order, no matter how large or how small . . . is filled accurately, speedily, satisfactorily.

Send for our latest catalog and bargain bulletins—full of the best buys in amateur equipment. Write to Dept. H-131.

AND SUPPLIES

MADE BY  
DEPENDABLE

NATIONALLY KNOWN  
MANUFACTURERS

ADVANCE  
AMPHENOL  
BARKER—WILLIAMSON  
BLILEY  
BUD  
COLLINS  
EIMAC  
GENERAL ELECTRIC  
GONSET  
GREENLEE  
GUARDIAN  
HALLICRAFTERS  
HAMMARLUND  
HARVEY-WELLS  
HYTRON  
E. F. JOHNSON  
MASTER MOBILE  
MILLEN  
MON-KEY  
MOSLEY  
NATIONAL CO.  
OHMITE  
PAR METAL  
PREMAX  
R M E  
SIMPSON  
STANCOR  
THORDARSON  
TRIMM  
UNITED TRANS. CORP.  
VIBROPLEX  
WORKSHOP, INC.  
and many others

**Newark** ELECTRIC COMPANY  
323 WEST MADISON STREET  
CHICAGO 6, ILLINOIS



# Great Circle Chart of the World Centered on THE UNITED STATES



To find the great circle bearing to any point in the world from the center of the United States, draw a straight line from the star and note the reading in degrees on the outer scale. The bar scale at the bottom of the chart can be used to determine the distance in statute miles. For bearings to the nearest degree reference is invited to the table on the opposite Page. The outlines of this chart were prepared by the U.S. Coast and Geodetic Survey.



# GREAT CIRCLE BEARINGS

FROM THE CENTER OF THE

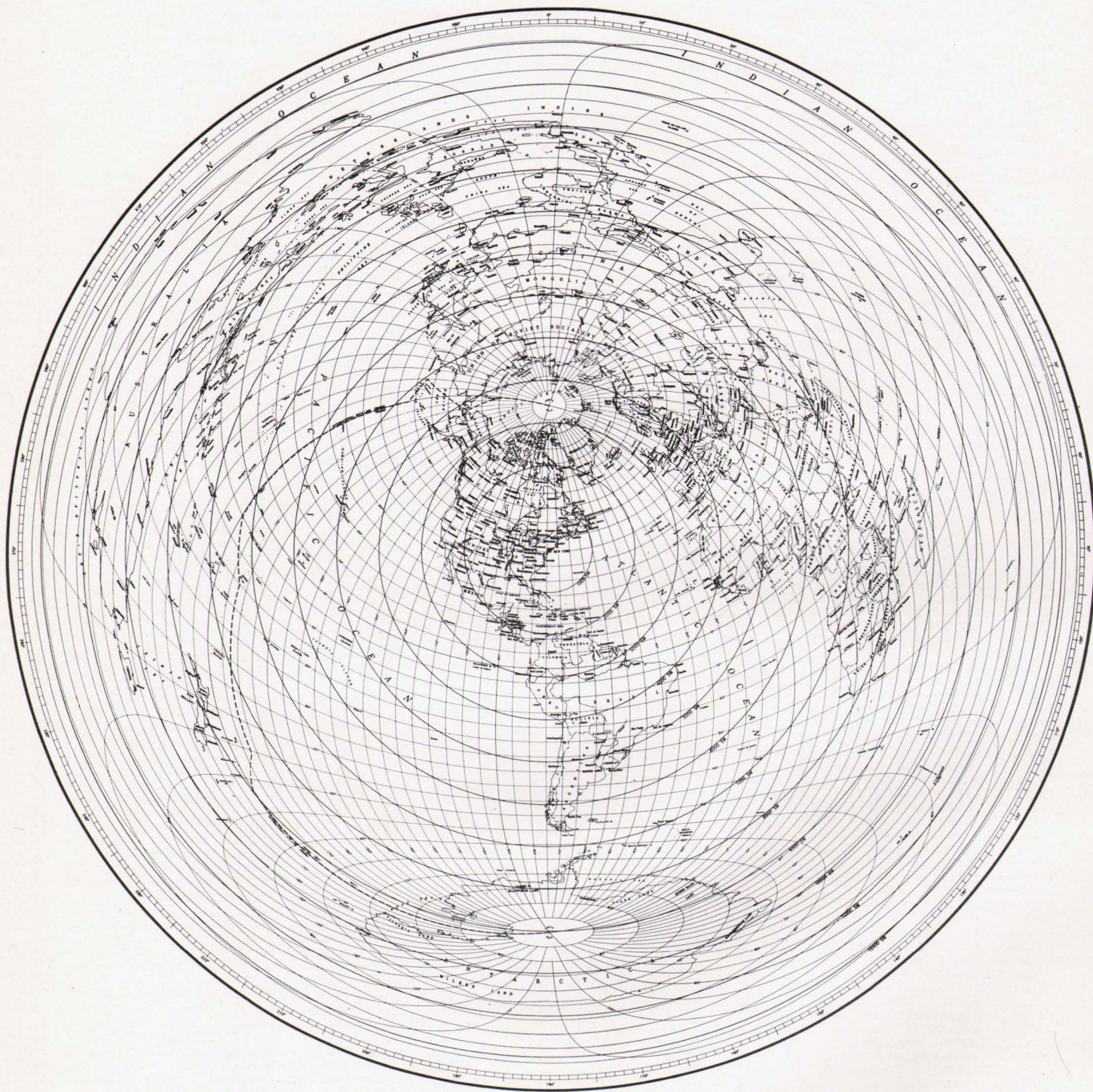
## UNITED STATES

The table below shows the great circle bearing in degrees from the exact center of the United States to countries throughout the world having licensed radio amateurs. Where cities are shown the bearing to the nearest degree is given. These bearings were compiled from information supplied by the U. S. Coast and Geodetic Survey.

Prefix	Country	Bearing	Prefix	Country	Bearing	Prefix	Country	Bearing
AC3	SIKKIM	352	KL7	ALASKA, Anchorage	322	VK3	Melbourne	250
AC4	TIBET, Lhasa	350		Fairbanks	329	VK4	Brisbane	257
AG2	TRIESTE	41	KM6	MIDWAY ISLAND	288	VK5	Darwin	287
AP	PAKISTAN, Karachi	13	KP4	PUERTO RICO	117	VK6	Perth	274
AR8	LEBANON, Beyrouth	36	KP6	PALMYRA ISLAND	256	VK7	TASMANIA, Hobart	243
C	CHINA, Chungking	335	KR6	OKINAWA ISLAND	318	VK9	NORFOLK ISLAND	248
	Pekin	333	KS4	SWAN ISLAND	144		PAPUA TERRITORY, Port Moresby	277
	Shanghai	325	KS6	SAMOA	248	VO	NEWFOUNDLAND, St. John's	59
CE	CHILE, Santiago	156	KV4	VIRGIN ISLANDS	115	VPI	BRITISH HONDURAS	152
CM	CUBA, Havana	135	KW6	WAKE ISLAND	287	VP2	LEEWARD and WINDWARD ISLANDS	112
CN8	FRENCH MOROCCO, Casablanca	62	KX6	MARSHALL ISLANDS	276	VP3	BRITISH GUIANA, Georgetown	120
CP	BOLIVIA, La Paz	146	KZ5	CANAL ZONE	145	VP4	TRINIDAD	120
CR4	CAPE VERDE ISLANDS	87	LA	NORWAY, Oslo	29	VP5	JAMAICA	127
CR5	PORTUGUESE GUINEA	84	LI	LIBYA, Tripoli	51	VP6	BARBADOS ISLANDS	112
CR6	ANGOLA, Nova Lisboa	83	LU	ARGENTINA, Buenos Aires	147	VP7	BAHAMAS ISLANDS	121
CR7	MOZAMBIQUE, Lourenco Marques	85	LX	LUXEMBOURG	42	VP8	FALKLAND ISLANDS	156
	Mozambique	65	LZ	BULGARIA, Sofia	38		South Georgia Island	147
CR8	GOA	7	MB9	AUSTRIA, Vienna	38		South Orkney Islands	155
CR9	MACAU	327	MD1	CIRENAICA	46	VP9	BERMUDA	94
CR10	TIMOR ISLAND	295	MD2	TRIPOLITANIA	51	VQ1	ZANZIBAR	57
CT1	PORTUGAL, Lisbon	59	MD3	ERITREA, Asmara	44	VQ2	NORTHERN RHODESIA, Lusaka	77
CT2	AZORES ISLANDS	67	MD4	BRITISH SOMALILAND	40	VQ3	TANGANYIKA, Dar-Es-Salaam	59
CT3	MADERIA ISLANDS	68	MD5	SUEZ CANAL ZONE	40	VQ4	KENYA, Nairobi	56
CX	URUGUAY, Montevideo	145	MD6	IRAQ, Baghdad	30	VQ5	UGANDA	59
DL	GERMANY, Berlin	37	MD7	CYPRUS	37	VQ6	BRITISH SOMALILAND	40
DU	PHILIPPINE ISLANDS, Manila	316	MF2	TRIESTE (British)	41	VQ8	CHAGOS ISLANDS	14
EA	SPAIN, Madrid	54	MI3	ERITREA, Asmara	44		Mauritius	51
EA6	BALEARIC ISLANDS	52	MP4	BAHRAIN ISLANDS and OMAN	28	VQ9	SEYCHELLES	38
EA8	CANARY ISLANDS	71	OA	PERU, Lima	153	VR1	GILBERT ISLANDS	267
EA9	SPANISH MOROCCO	59	OE	FINLAND, Helsinki	25	VR2	FIJI ISLANDS	251
EI	IRELAND, Dublin	43	OH	AUSTRIA, Vienna	38	VR3	FANNING ISLAND	252
EK1	TANGIER ZONE	60	OK	CZECHOSLOVAKIA, Prague	38	VR4	SOLOMON ISLANDS	210
EL	LIBERIA, Monrovia	86	ON	BELGIUM, Brussels	41	VR5	TONGA ISLANDS	244
EP	IRAN, Tehran	23	OQ5	BELGIAN CONGO, Elisabethville	74	VR6	PITCAIRN ISLAND	208
ET	ETHIOPIA, Addis Ababa	48		Leopoldville	76	VS	MALAYA, Singapore	326
F	FRANCE, Paris	44		Stanleyville	65	VS4	BRITISH NORTH BORNEO	314
FA	ALGERIA, Algiers	54	OY	GREENLAND, Godthaab	34	VS5	BRUNEI and SARAWAK	316
FB8	MADAGASCAR, Antsirana	53	OY	FAEROES ISLANDS	34	VS6	HONG KONG	326
	Tananarive	63	OZ	DENMARK, Copenhagen	34	VS7	CEYLON	1
FC	CORSICA	46	PA	NETHERLANDS, Amsterdam	40	VS9	ADEN, Aden	39
FD8	TOGOLAND	77	PK	JAVA, Batavia	317	VU	INDIA, Bombay	8
FE8	FRENCH CAMEROONS	72	PK4	SUMATRA	328		Calcutta	351
FF8	FRENCH WEST AFRICA, Dakar	84	PK5	BORNEO	314		Delhi	3
FG8	GUADELOUPE	114	PK6	CELEBES ISLAND	305	VU4	LACCADIVE ISLANDS	9
FH8	FRENCH INDO CHINA, Saigon	328	PK7	NETHERLAND NEW GUINEA	290	VU5	ANDAMAN ISLANDS	345
FK8	NEW CALEDONIA, Noumea	254	PX	ANDORRA	50	XE	MEXICO, Mexico City	178
FL8	FRENCH SOMALILAND, Djibouti	42	PY	BRAZIL, Natal	112	XZ	BURMA, Rangoon	342
FMS	MARTINIQUE	117		Rio de Janeiro	129	YA	AFGHANISTAN, Kandahar	13
F08	FRENCH OCEANIA, Tahiti	229	PZ	SURINAM, (Netherland Guiana)	121	YI	IRAQ, Baghdad	30
FP8	MIQUELON and ST. PIERRE IS.	64	SM	SWEDEN, Stockholm	29	YJ	NEW HEBRIDES	260
FQ8	FRENCH EQUATORIAL AFRICA	65	SP	POLAND, Warsaw	33	YK	SYRIA	34
FR8	REUNION ISLAND	55	ST	ANGLO-EGYPTIAN SUDAN, Khartoum	49	YN	NICARAGUA	150
FT4	TUNISIA, Tunis	50	SU	EGYPT, Cairo	41	YO	ROMANIA, Bucharest	36
FU8	NEW HEBRIDES	259	SV	GREECE, Athens	41	YS	SALVADOR, San Salvador	156
FY8	FRENCH GUIANA, Cayenne	117	SV5	DODECANESE ISLANDS	40	YT	YUGOSLAVIA, Belgrade	39
G	ENGLAND, London	43	TA	TURKEY, Ankara	35	YV	VENEZUELA, Caracas	126
GC	CHANNEL ISLANDS	45	TF	ICELAND, Reykjavik	35	ZA	ALBANIA, Tirana	41
GD	ISLE OF MAN	41	TG	GUATEMALA, Guatemala City	161	ZB1	MALTA	48
GI	NORTHERN IRELAND, Belfast	42	TI	COSTA RICA	150	ZB2	GIBRALTAR	58
GM	SCOTLAND, Glasgow	40	TR	LIBYA, Tripoli	51	ZC1	TRANSJORDAN	36
GW	WALES	43	TT	TANNU TUVA, Kyzyl Khoto	351	ZC2	COGOS ISLANDS	327
HA	HUNGARY, Budapest	37	U	SOVIET UNION, Moscow	23	ZC3	CHRISTMAS ISLAND	315
HB	SWITZERLAND, Bern	43	UB5	UKRAINE	30	ZC4	CYPRUS	37
HC	ECUADOR, Quito	148	UC5	WHITE RUSSIA	25	ZD1	SIERRA LEONE, Freetown	81
HC8	GALAPAGOS ISLANDS	167	UD6	AZERBAIJAN	23	ZD2	NIGERIA, Lagos	76
HE1	LEICHTENSTEIN	43	UF6	GEORGIA	28	ZD3	GAMBIA	84
HH	HAITI, Port-au-Prince	124	UG6	ARMENIA	26	ZD4	GOLD COAST, Accra	80
HI	DOMINICAN REPUBLIC	122	UH8	TURKOMAN	19	ZD6	NTASALAND	69
HK	COLOMBIA, Bogota	140	UI8	UZBEK	12	ZD7	ST. HELENA	100
HLI	KOREA, Seoul	324	UJ8	TADZHIK	7	ZD8	ASENCION ISLAND	99
HP	PANAMA	145	UL7	KAZAKH	10	ZD9	TRISTAN da CUNHA	122
HR	HONDURAS	152	UM8	KIRGHIZ	5	ZE	SOUTHERN RHODESIA, Salisbury	77
HS	SIAM, Bangkok	336	UN1	KARELO-FINNISH REPUBLIC	20	ZK1	COOK ISLANDS	234
HV	VATICAN CITY	45	UO5	MOLDAVIA	32	ZK2	NIUE	242
HZ	SAUDI ARABIA	34	UP	LITHUANIA	30	ZL1	NEW ZEALAND, Auckland	238
I	ITALY, Rome	45	UQ	LATVIA	29	ZL2	Wellington	234
IS	SARDINIA	48	UR	ESTONIA	27	ZL3	Christchurch	233
JA	JAPAN, Tokyo	315	VE1	CANADA, Halifax	68	ZL4	Dunedin	231
KB6	BAKER ISLAND	262	VE2	Montreal	64	ZM6	SAMOA (British)	248
KC6	CAROLINE ISLANDS	260	VE3	Toronto	77	ZP	PARAGUAY, Asuncion	141
KG4	GUANTANAMO BAY, Cuba	126	VE4	Winnipeg	10	ZS	UNION OF SOUTH AFRICA, Capetown	104
KG6	GUAM	297	VE5	Saskatoon	339		Durban	91
KG61	IWO JIMA ISLAND	317	VE6	Edmonton	330		Johannesburg	89
KG6S	SAIPAN ISLAND	297	VE7	Vancouver	308	ZS3	SOUTH WEST AFRICA, Windhoek	92
KG6T	TINIAN ISLAND	297	VE8	Fort Nelson	333	ZS7	SWAZILAND	87
KH6	HAWAIIAN ISLANDS, Honolulu	267	VK1	HEARD ISLAND	163	ZS8	BASUTOLAND	93
KJ6	JOHNSTON ISLAND	270	VK2	AUSTRALIA, Sydney	252	ZS9	BECHUANALAND	87



## Great Circle Chart of the World Centered on NEW YORK, N. Y.



To find the great circle bearing of any point in the world from New York, N. Y., draw a straight line from the center and note the reading in degrees on the outer scale. The circles at 1,000 statute mile intervals, permit this chart to be used as a distance table from New York City to any point in the world. Prepared by the U. S. Coast and Geodetic Survey.



# GREAT CIRCLE BEARINGS

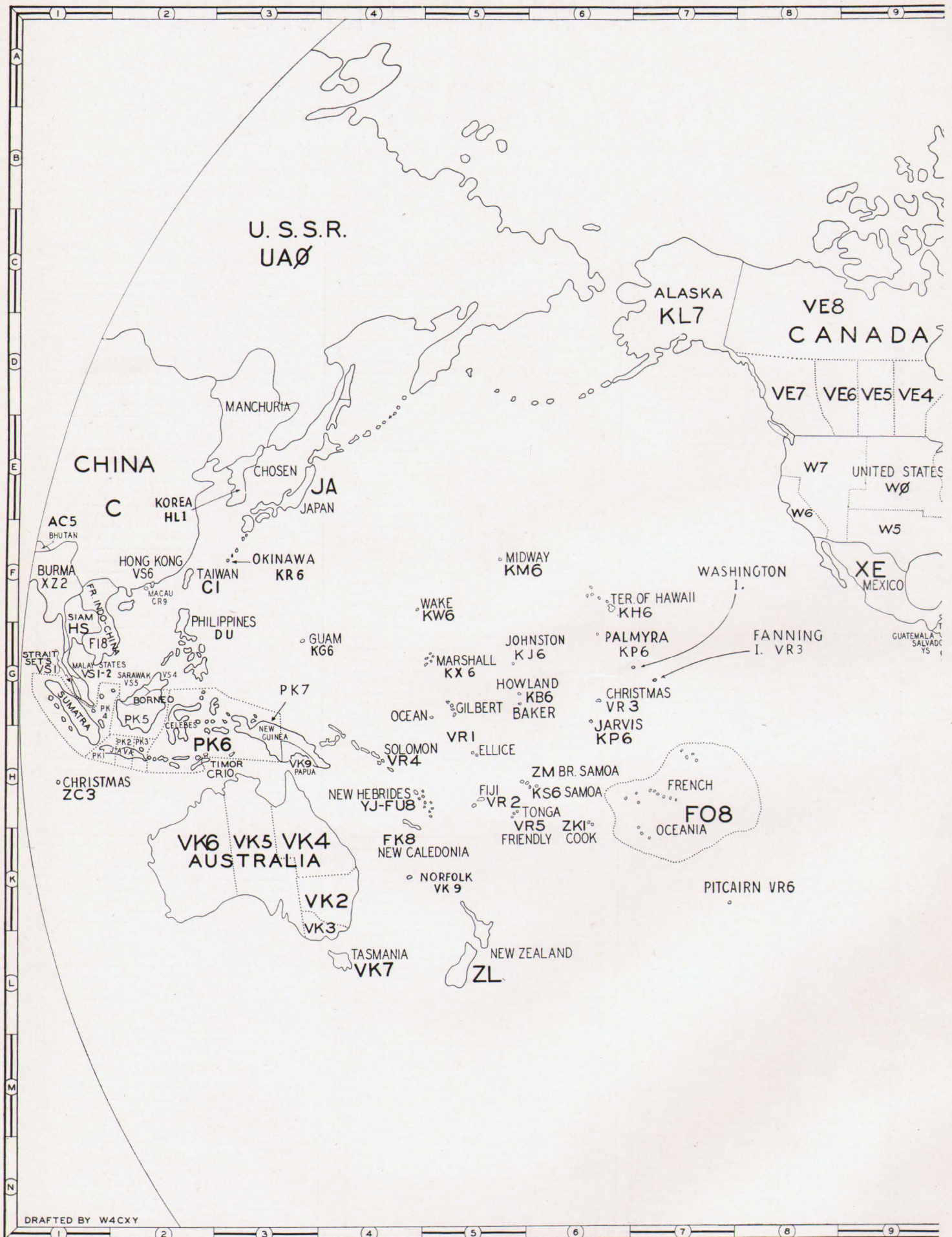
## CENTERED ON NEW YORK, N. Y.

The table below shows the great circle bearing in degrees from New York, N. Y., to countries throughout the world having licensed radio amateurs. Where cities are shown the bearing to the nearest degree is given. These bearings were compiled from information supplied by the U. S. Coast and Geodetic Survey.

Prefix	Country	Bearing	Prefix	Country	Bearing	Prefix	Country	Bearing
AC3	SIKKIM	17	KL7	ALASKA, Anchorage	321	VK3	Melbourne	262
AC4	TIBET, Lhasa	14		Fairbanks	327	VK4	Brisbane	274
AG2	TRIESTE	53	KM6	MIDWAY ISLAND	301	VK5	Darwin	315
AP	PAKISTAN, Karachi	36	KP4	PUERTO RICO, San Juan	160	VK6	Perth	315
AR8	LEBANON, Beyrouth	52	KP6	PALMYRA ISLAND	271	VK7	TASMANIA, Hobart	252
AR8	CHINA, Chungking	359	KR6	OKINAWA ISLAND	340	VK9	NORFOLK ISLAND	263
C	Pekin	352	KS4	SWAN ISLAND	203		PAPUA TERRITORY, Port Moresby	299
	Shanghai	346	KS6	SAMOA	264	VO	NEWFOUNDLAND, St. John's	60
CE	CHILE, Santiago	177	KV4	VIRGIN ISLANDS	151	VP1	BRITISH HONDURAS	212
CM	CUBA, Havana	204	KW6	WAKE ISLAND	304	VP2	LEEWARD & WINDWARD ISLANDS	151
ON8	FRENCH MOROCCO, Casablanca	75	KX6	MARSHALL ISLANDS	294	VP3	BRITISH GUIANA, Georgetown	152
GP	BOLIVIA, La Paz	173	KZ5	CANAL ZONE	190	VP4	TRINIDAD	155
GR4	CAPE VERDE ISLANDS	105	LA	NORWAY, Oslo	39	VP5	JAMAICA, Kingston	187
GR5	PORTUGUESE GUINEA	101	LI	LIBYA, Tripoli	65	VP6	BARBADOS ISLANDS	149
GR6	ANGOLA, Nova Lisboa	100	LU	ARGENTINA, Buenos Aires	167	VP7	BAHAMAS ISLANDS	186
GR7	MOZAMBIQUE, Lourenco Marques	101	LX	LUXEMBOURG	51	VP8	FALKLAND ISLANDS	171
	Mocambique	85	LZ	BULGARIA, Sofia	52		South Georgia Island	159
GR9	GOA	35	MB9	AUSTRIA, Vienna	49		South Orkney Islands	166
CR9	MACAU	352	MD1	CIRENAICA	61	VP9	BERMUDA	134
CR10	TIMOR ISLAND	327	MD2	TRIPOLITANIA	65	VQ1	ZANZIBAR	79
CT1	PORTUGAL, Lisbon	70	MD3	ERITREA, Asmara	63	VQ2	NORTHERN RHODESIA, Lusaka	94
CT2	AZORES ISLANDS	78	MD4	BRITISH SOMALILAND	62	VQ3	TANGANYIKA, Dar-Es-Salaam	80
CT3	MADERIA ISLANDS	81	MD5	SUEZ CANAL ZONE	57	VQ4	KENYA, Nairobi	77
CX	URUGUAY, Montevideo	165	MD6	IRAQ, Baghdad	47	VQ5	UGANDA	83
DL	GERMANY, Berlin	46	MD7	CYPRUS	53	VQ6	BRITISH SOMALILAND, Berbera	62
DU	PHILIPPINE ISLANDS, Manila	343	MF2	TRIESTE (British)	53	VQ8	CHAGOS ISLANDS	50
EA	SPAIN, Madrid	66	MI3	ERITREA, Asmara	63		Mauritius	78
EA6	BALEARIC ISLANDS	64	MP4	BAHRAIN ISLANDS & OMAN	48	VQ9	SEYCHELLES	65
EA8	CANARY ISLANDS	85	OA	PERU, Lima	184	VRI	GILBERT ISLANDS	283
EA9	SPANISH MOROCCO	72	OH	FINLAND, Helsinki	35	VR2	FIJI ISLANDS, Suva	267
EI	IRELAND, Dublin	50	OE	AUSTRIA, Vienna	49	VR3	FANNING ISLAND	270
EK1	TANGIER ZONE	72	OK	CZECHOSLOVAKIA, Prague	48	VR4	SOLOMON ISLANDS	290
EL	LIBERIA, Monrovia	103	ON	BELGIUM, Brussels	51	VR5	TONGA ISLANDS	261
EP	IRAN, Tehran	42	OQ5	BELGIAN CONGO, Elisabethville	91	VR6	PITCAIRN ISLAND	229
ET	ETHIOPIA, Addis Ababa	68		Leopoldville	94	VS	MALAYA, Singapore	3
F	FRANCE, Paris	54		Stanleyville	83	VS4	BRITISH NORTH BORNEO	345
FA	ALGERIA, Algiers	67	OY	GREENLAND, Godthaab	22	VS5	BRUNEI and SARAWAK	348
FB8	MADAGASCAR, Antsirana	77	OZ	FAEROES ISLANDS	38	VS6	HONG KONG	351
	Tananarive	84	PA	DENMARK, Copenhagen	43	VSG	CEYLON	32
FC	CORSICA	58	PK	NETHERLANDS, Amsterdam	49	VS9	ADEN, Aden	61
FD8	TOGOLAND	93	PK4	JAVA, Batavia	358	VU	INDIA, Bombay	34
FEB	FRENCH CAMEROONS	90	PK5	SUMATRA	5		Calcutta	18
FF8	FRENCH WEST AFRICA, Dakar	101	PK6	BORNEO	348		Delhi	26
FG8	GUADELOUPE	152	PK7	CELEBES ISLAND	336	VU4	LACCADIVE ISLANDS	38
F18	FRENCH INDO CHINA, Saigon	359	PK7	NETHERLAND NEW GUINEA	313	VU5	ANDAMAN ISLANDS	16
FK8	NEW CALEDONIA, Noumea	271	PX	ANDORRA	62	XE	MEXICO, Mexico City	233
FL8	FRENCH SOMALILAND, Djibouti	63	PY	BRAZIL, Natal	132	XZ	BURMA, Rangoon	11
FM8	MARTINIQUE	153		Rio de Janeiro	150	YA	AFGHANISTAN, Kandahar	34
F08	FRENCH OCEANIA, Tahiti	248	PZ	SURINAM (Netherland Guiana)	151	YI	IRAQ, Baghdad	47
FP8	MIQUELON & ST. PIERRE IS.	55	SM	SWEDEN, Stockholm	38	YJ	NEW HEBRIDES	276
FQ8	FRENCH EQUATORIAL AFRICA	82	SP	POLAND, Warsaw	44	YK	SYRIA	50
FR8	REUNION ISLAND	81	ST	ANGLO-EGYPTIAN SUDAN, Khartoum	67	YN	NICARAGUA, Managua	204
FT4	TUNISIA, Tunis	63	SU	EGYPT, Cairo	58	YO	ROMANIA, Bucharest	49
FY8	NEW HEBRIDES	276	SV	GREECE, Athens	56	YS	SALVADOR, San Salvador	210
F08	FRENCH GUIANA, Cayenne	146	SV5	DODECANESE ISLANDS	54	YT	YUGOSLAVIA, Belgrade	51
G	ENGLAND, London	51	TA	TURKEY, Ankara	49	YV	VENEZUELA, Caracas	166
GC	CHANNEL ISLANDS	53	TF	ICELAND, Reykjavik	34	ZA	ALBANIA, Tirana	55
GD	ISLE OF MAN	48	TG	GUATEMALA, Guatemala City	214	ZB1	MALTA	61
GI	NORTHERN IRELAND, Belfast	49	TI	COSTA RICA, San Jose	199	ZB2	GIBRALTAR	71
GM	SCOTLAND, Glasgow	46	TR	LIBYA, Tripoli	65	ZC1	TRANSJORDAN	53
GW	WALES	50	TT	TANNU TUVA, Kyzyl Khot	7	ZC2	COCOS ISLANDS	18
HA	HUNGARY, Budapest	49	U	SOVIET UNION, Moscow	34	ZC3	CHRISTMAS ISLAND	267
HB	SWITZERLAND, Bern	54	UB5	UKRAINE	43	ZC4	CYPRUS	53
HC	ECUADOR, Quito	187	UC5	WHITE RUSSIA	39	ZD1	SIERRA LEONE, Freetown	103
HCB	GALAPAGOS ISLANDS	205	UD6	AZERBAIJAN	42	ZD2	NIGERIA, Lagos	93
HE1	LEICHTENSTEIN	54	UF6	GEORGIA	41	ZD3	GAMBIA	102
HH	HAITI, Port-au-Prince	175	UG6	ARMENIA	43	ZD4	GOLD COAST, Accra	96
HI	DOMINICAN REPUBLIC	170	UH8	TURKOMAN	33	ZD6	NYASALAND	87
HK	COLOMBIA, Bogota	180	UI8	UZBEK	29	ZD7	ST. HELENA	116
H11	KOREA, Seoul	343	UJ8	TADZHIK	28	ZD8	ASENCION ISLAND	116
HP	PANAMA	190	UL7	KAZAKH	22	ZD9	TRISTAN da CUNHA	135
HR	HONDURAS, Tegucigalpa	207	UM8	KIRGHIZ	21	ZE	SOUTHERN RHODESIA, Salisbury	94
HS	SIAM, Bangkok	6	UNI	KARELO-FINNISH REPUBLIC	27	ZK1	COOK ISLANDS	252
HV	VATICAN CITY	57	UO5	MOLDAVIA	46	ZK2	NIUE	258
HZ	SAUDI ARABIA	55	UP	LITHUANIA	40	ZL1	NEW ZEALAND, Auckland	251
I	ITALY, Rome	57	UQ	LATVIA	38	ZL2	Wellington	245
IS	SARDINIA	60	UR	ESTONIA	36	ZL3	Christchurch	243
JA	JAPAN, TOKYO	333	VE1	CANADA, Halifax	61	ZL4	Dunedin	265
KB6	BAKER ISLAND	278	VE2	Montreal	4	ZM6	SAMOA (British)	265
KC6	CAROLINE ISLANDS	312	VE3	Toronto	305	ZP	PARAGUAY, Asuncion	164
KG4	GUANTANAMO BAY, Cuba	181	VE4	Winnipeg	307	ZS	UNION OF SOUTH AFRICA, Capetown	116
KG6	GUAM	318	VE5	Saskatoon	308		Durban	106
KG61	IWO JIMA ISLAND	327	VE6	Edmonton	311		Johannesburg	104
KG6S	SAIPAN ISLAND	318	VE7	Vancouver	302	ZS3	SOUTH WEST AFRICA, Windhoek	107
KG6T	TINIAN ISLAND	318	VE8	Fort Nelson	318	ZS7	SWAZILAND	102
KH6	HAWAIIAN ISLANDS, Honolulu	283	VK1	HEARD ISLAND	130	ZS8	RASUTOLAND	107
KJ6	JOHNSTON ISLAND	286	VK2	AUSTRALIA, Sydney	266	ZS9	BECHUANALAND	103

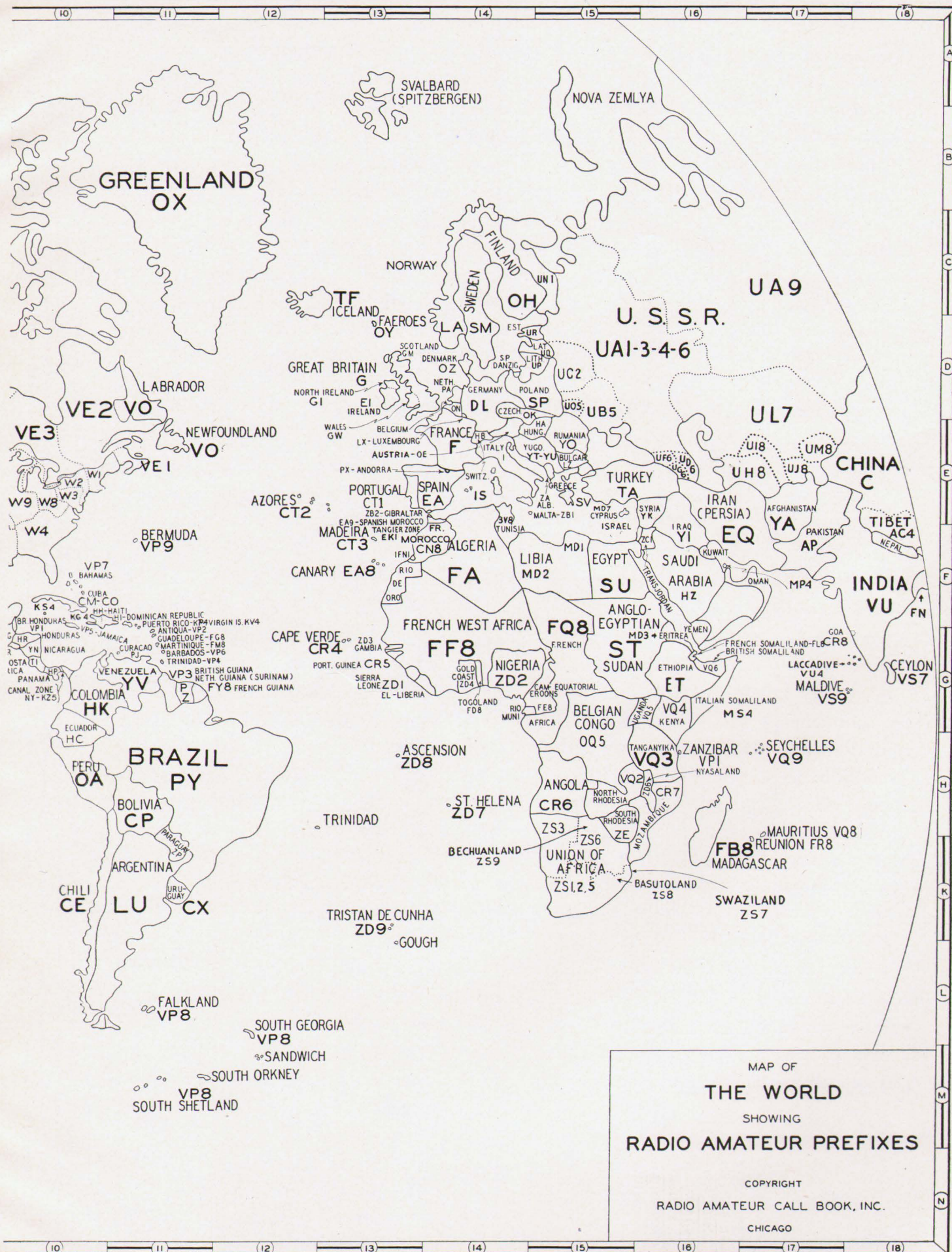


# WORLD MAP SHOWING





# RADIO AMATEUR PREFIXES





# GREAT CIRCLE BEARINGS FROM THE UNITED STATES TO VARIOUS WORLD WIDE METROPOLITAN AREAS

	AMSTERDAM, HOLLAND	ANCHORAGE, ALASKA	ASUNCION, PARAGUAY	AUCKLAND, NEW ZEALAND	BOGOTA, COLOMBIA	BOMBAY, INDIA	BERN, SWITZERLAND	BRUSSELS, BELGIUM	BUENOS AIRES, ARGENTINA	CAIRO, EGYPT	CAPTOWN, SOUTH AFRICA	CARACAS, VENEZUELA	COPENHAGEN, DENMARK	GUATEMALA CITY, GUAT.	ALA	HAVANA, CUBA	HELSINKI, FINLAND	HONOLULU, T. H.	JOHANNESBURG, SOUTH AFRICA	LA PAZ, BOLIVIA	LIMA, PERU	LONDON, ENGLAND	MADRID, SPAIN	MANILA, PHILIPPINE ISLANDS	MEXICO CITY, MEXICO	MONTEVIDEO, URUGUAY	MONTREAL, CANADA	OSLO, NORWAY	PARIS, FRANCE	PRAGUE, CZECHOSLOVAKIA	QUITO, ECUADOR	RIO DE JANEIRO, BRAZIL	ROME, ITALY	SAN JOSE, COSTA RICA	SANTIAGO, CHILE	SHANGHAI, CHINA	SINGAPORE, MALAYA	STOCKHOLM, SWEDEN	SYDNEY, AUSTRALIA	TOKYO, JAPAN
ATLANTA, GA.	43	325	153	242	160	26	48	45	158	51	114	141	38	198	170	30	280	102	160	170	45	58	329	227	156	32	34	47	42	170	139	51	179	168	336	346	33	254	324	
BIRMINGHAM, ALA.	42	325	151	241	155	23	47	44	156	50	113	137	37	191	158	29	279	101	157	167	44	57	327	221	154	36	33	47	42	165	137	50	173	166	334	342	32	253	323	
BISMARCK, N. D.	42	315	141	240	143	7	45	43	146	40	97	131	35	162	142	27	261	81	146	154	45	56	317	177	145	84	33	46	39	151	129	46	153	155	325	328	30	256	314	
BOSTON, MASS.	51	321	167	253	186	36	56	53	169	60	117	172	45	217	210	36	284	105	177	187	53	68	346	235	168	331	40	56	50	191	153	59	205	181	349	7	39	270	335	
BUFFALO, N. Y.	49	320	160	250	172	29	53	51	163	55	112	159	42	203	189	34	279	99	168	178	51	65	338	222	161	54	38	53	47	179	146	56	189	173	342	356	37	266	329	
CHARLESTON, W. VA.	46	322	156	246	167	28	50	47	160	53	113	151	40	201	183	32	279	101	164	174	48	61	334	224	159	37	36	50	45	175	143	53	185	170	339	351	35	259	327	
CHEYENNE, WYO.	38	322	138	236	135	3	41	40	143	37	100	122	32	151	127	24	263	84	141	148	41	52	312	166	142	69	30	42	36	143	126	42	144	152	322	321	27	250	312	
CHICAGO, ILL.	45	320	152	245	158	21	49	47	156	49	108	144	39	186	165	31	274	95	158	167	48	60	328	207	154	66	36	50	44	167	138	51	173	166	335	343	34	260	323	
CLEVELAND, OHIO	47	320	157	247	167	27	52	49	161	53	111	153	41	198	182	33	278	99	165	174	50	63	334	219	159	53	37	52	46	175	143	54	184	171	340	352	36	263	327	
COLUMBIA, S. C.	44	324	156	243	166	29	49	46	161	53	115	148	39	206	186	31	281	103	164	175	46	59	333	232	159	24	35	48	44	175	142	52	187	171	339	352	34	255	327	
DALLAS, TEXAS	39	326	142	237	138	12	43	41	148	44	110	122	34	161	123	26	274	97	146	154	42	53	317	189	147	48	31	43	38	149	130	45	150	157	326	326	29	249	317	
DENVER, COLORADO	38	323	137	235	133	2	41	39	143	37	101	120	32	149	124	24	264	85	141	147	41	52	312	164	142	66	29	42	35	142	125	42	142	152	321	320	27	249	312	
DES MOINES, IOWA	43	320	146	242	149	15	47	44	151	45	105	135	37	173	149	28	270	90	152	160	46	58	323	194	150	68	34	47	41	158	134	48	162	161	330	335	32	256	319	
DETROIT, MICH.	47	320	156	247	166	25	51	49	160	52	110	151	41	195	178	32	277	97	163	173	50	63	333	216	159	62	37	52	46	173	142	54	182	169	339	350	35	263	326	
EL PASO, TEXAS	36	329	135	233	125	1	39	37	142	37	108	111	30	136	106	22	270	94	137	142	38	49	308	150	140	52	27	40	34	135	124	41	131	149	319	313	25	245	312	
HELENA, MONTANA	36	318	133	233	130	355	39	38	138	31	89	119	30	144	124	22	252	71	136	142	39	49	308	154	137	78	28	40	33	138	121	39	138	147	317	316	25	249	307	
HOUSTON, TEXAS	39	328	143	237	137	15	43	41	149	45	113	120	34	162	116	26	277	100	147	154	41	53	317	199	147	41	30	43	38	149	130	46	150	158	327	326	29	247	318	
INDIANAPOLIS, IND.	45	321	153	244	160	23	49	47	157	50	110	144	39	190	168	31	276	97	160	169	47	60	329	212	155	54	35	49	43	168	139	52	176	167	336	345	34	259	324	
JACKSONVILLE, FLA.	42	326	155	242	163	30	48	44	160	53	117	142	37	209	185	30	283	105	163	173	44	57	331	239	158	20	33	47	42	174	141	51	187	170	338	350	33	251	326	
KANSAS CITY, MO.	42	322	145	240	146	14	45	43	151	45	107	132	36	171	143	28	271	93	151	159	44	56	321	193	149	61	33	46	40	156	133	47	159	160	329	333	31	254	319	
LITTLE ROCK, ARK.	41	325	146	240	147	17	45	43	152	47	111	130	36	175	141	28	275	98	152	160	43	56	322	203	150	47	32	45	40	157	134	48	161	161	330	334	31	252	320	
LOS ANGELES, CALIF.	31	333	127	228	116	347	34	33	135	28	102	104	26	121	100	18	260	84	128	132	34	44	300	126	134	58	24	35	28	124	117	34	119	141	312	303	21	241	306	
LOUISVILLE, KY.	44	322	153	244	160	23	49	46	157	50	111	144	39	191	168	30	277	98	160	169	47	60	329	215	156	47	35	49	43	168	139	51	176	167	336	345	33	257	324	
MIAMI, FLORIDA	41	328	155	240	163	33	47	43	160	54	118	138	37	223	217	30	285	108	163	175	43	56	331	254	158	13	33	46	42	176	140	50	194	171	339	351	32	247	327	
MILWAUKEE, WIS.	45	319	152	245	158	20	50	47	156	49	107	145	39	185	165	31	273	94	158	167	48	61	328	205	154	72	36	50	44	166	138	52	173	165	335	343	34	261	323	
MINNEAPOLIS, MINN.	44	317	147	243	152	15	48	46	152	46	103	139	38	175	154	29	270	90	153	161	47	59	324	193	150	81	35	49	42	160	134	49	164	161	331	337	33	259	319	
NASHVILLE, TENN.	43	323	151	242	157	23	48	45	156	50	112	140	38	190	162	30	277	99	158	167	46	58	328	216	155	43	34	48	42	166	138	50	174	166	335	343	33	255	324	
NEW ORLEANS, LA.	40	327	147	239	146	21	45	42	153	48	114	127	35	182	133	28	279	102	152	161	43	55	322	220	151	35	32	45	40	158	135	48	163	162	331	334	30	249	321	
NEW YORK, N. Y.	49	321	164	251	180	34	54	51	167	58	116	166	43	214	204	35	283	104	173	184	51	66	343	233	165	4	39	54	48	187	150	57	199	177	346	3	38	266	333	
NORFOLK, VA.	46	323	161	247	176	33	51	48	165	56	116	160	41	213	203	33	283	104	170	181	48	62	339	235	163	12	36	51	46	184	147	55	197	175	344	0	36	260	331	
PHILADELPHIA, PA.	48	322	163	249	178	33	53	50	166	57	115	164	42	212	202	34	282	103	172	182	50	65	341	232	164	11	38	53	48	185	149	56	197	176	345	2	37	264	332	
PHOENIX, ARIZONA	34	330	131	231	121	354	37	35	138	33	105	108	28	129	104	20	265	89	133	138	36	47	304	137	137	56	26	38	31	130	121	38	126	146	316	308	23	243	309	
PITTSBURGH, PA.	47	321	158	247	170	29	52	49	162	54	113	155	41	203	187	33	279	100	167	176	49	63	336	224	160	41	37	52	46	178	145	55	188	172	341	354	36	262	329	
ST. LOUIS, MO.	43	322	149	242	153	19	47	45	154	48	109	137	37	181	156	29	274	96	155	164	46	58	325	204	152	55	34	47	42	162	136	49	167	163	332	339	32	256	321	
SALT LAKE CITY, UTAH	35	325	132	232	127	355	38	36	139	32	96	114	29	138	116	21	258	79	135	141	38	48	307	149	136	67	27	39	32	135	121	38	134	146	317	313	24	247	308	
SAN FRANCISCO, CALIF.	30	333	125	226	115	343	32	31	132	24	95	104	24	121	101	16	252	74	126	130	33	42	298	126	131	62	22	33	26	123	115	32	119	139	310	301	19	240	303	
SEATTLE, WASHINGTON	31	321	125	227	120	345	33	32	131	23	79	110	25	131	113	17	240	58	128	133	34	43	300	138	130	75	24	35	27	128	113	32	127	139	309	306	20	243	301	
WASHINGTON, D. C.	47	322	161	248	175	32	52	49	164	56	115	160	41	210	198	33	282	103	170	180	49	63	339	231	163	20	37	52	47	182	147	55								